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AUTHOR Baylis, Paula
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ABSTRACT

This book includes topics on the surveillance, epidemiology, and end results reporting of human cancer. An anatomy section describes various systems of the human body, emphasizing those sites with high incidence of cancer. A general reference section describes weights and measures, pathology and histology, diagnostic techniques, and medical prefixes and suffixes. Another section describes therapies and drugs used to treat cancer. (MLH)

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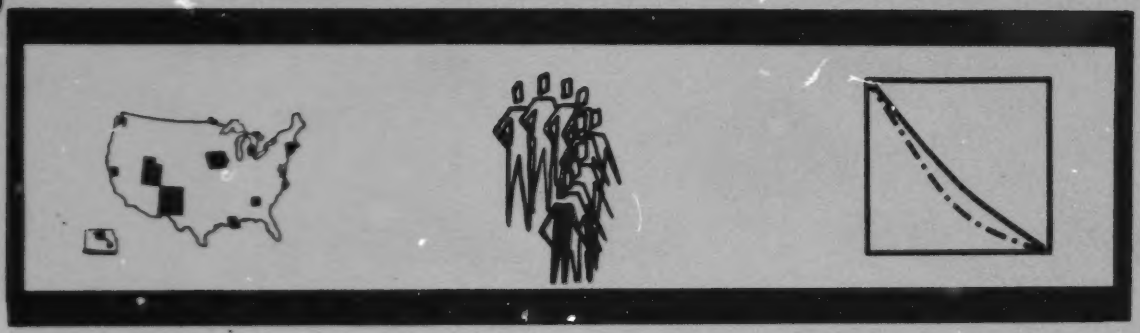
# INFORMATIONAL GUIDEBOOK
# TRAINING AIDS

## Cancer Surveillance, Epidemiology and End Results Reporting

## SEER Program



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Institutes of Health

SEER INFORMATIONAL GUIDEBOOK
TRAINING AIDS

Prepared by Paula Baylis

The "Guidebook" replaces a former set of data entitled Training Aids which was distributed by the End Results Group as an appendix to the 1967 Code Manual.

The basic descriptions of the various anatomic sites have been expanded, but still are of general structural information, with no emphasis on functions of any system or any organ. Neither has the lymph node drainage been described, nor is there any specific reference to the circulatory routes serving any organ, tissue, or system.

The section on Anatomy is comprised of various systems of the human body. Each system-group includes brief descriptions of those sites with higher incidence rates of cancer. Because of the anatomic relationship, some primary sites may be mentioned in more than one section. Every site in the Oral Cavity has been condensed as ready reference for Head and Neck Tumors in the section on the Alimentary Canal.

The primary site order follows the Manual of Tumor Nomenclature and Coding which is used by SEER participants.

Summarizations of advances in medical science which are appropriate for use in the SEER Program will be provided. Site-specific epidemiologic findings and brief items of statistical data will be added to the "Notes" from time to time.

The Guidebook will provide a convenient source of reference to anatomical limits as well as general instructions and reminders on many subjects pertaining to the abstracting of hospital charts of cancer patients. In addition, the Guidebook will be a valuable training tool for new Tumor Registry personnel.

Field Liaison Section
Biometry Branch
National Cancer Institute
April 23, 1975

SEER INFORMATIONAL GUIDEBOOK
TRAINING AIDS

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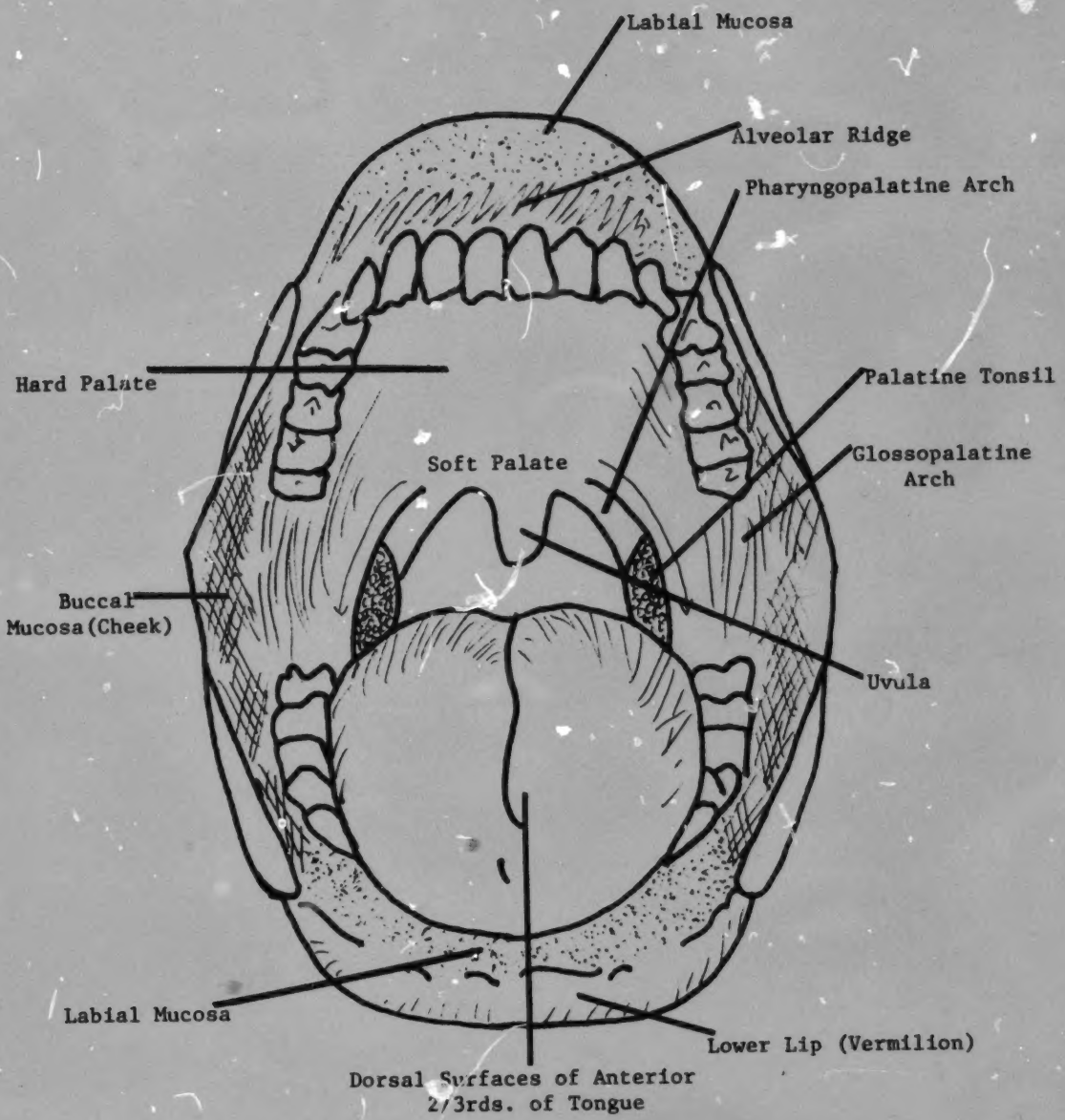
The alimentary canal is referred to in several different terms ---alimentary tube, gastrointestinal tract, and digestive tract.

The anatomy of the digestive system consists of the accessory organs of the digestion process - the tongue, teeth, salivary glands, liver and pancreas - and the alimentary canal.

The alimentary canal is a muscular tube lined with mucous membrane and extending from the lips to the anus. It includes the oral cavity, pharynx, esophagus, stomach, small intestine, and large intestine.

ORAL CAVITY

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I A 1

The LIPS, upper lip and lower lip, are joined at the corners (commissures), forming the anterior wall of the oral cavity and its external opening.

The LOWER LIP extends transversely between the commissures and vertically from its free border to a horizontal depression that separates the lip from the chin.

The UPPER LIP extends transversely between the commissures and vertically from the free border to the base of the nose in the center and to the nasolabial folds on each side.

Both lips are composed of striated muscle and fibro-elastic connective tissue. The outer surface is covered with skin. The red, free margins (vermilion) of the lips are covered with modified skin. There is a transition from modified skin to mucous membrane on the inner surface of the lips. In this region the dermis of the skin is replaced by the lamina propria typical of mucous membranes.

NOTES:

About 95 percent of lip cancers occur on the lower lip at the mucocutaneous junction, and almost all are of the squamous cell type. They are more common in the male.

The infrequent carcinomas of the upper lip are more often of basal cell types.

The early cancer may be a small nodule, warty excrescence, or chronic fissure developing into a painless ulcer which grows slowly.

The TONGUE is divided into two portions: the anterior two-thirds or mobile portion, lying anterior to the lingual V and the posterior third or base lying posterior to the lingual V. The lingual V, formed by the vallate papillae, is an inverted V-shaped groove sometimes referred to as the sulcus terminalis.

The ANTERIOR two-thirds (mobile portion) of the tongue anatomically is part of the oral cavity. The base of the tongue (posterior third) is anatomically situated in the oropharynx.

The tongue is composed of striated muscle in longitudinal, vertical, and horizontal planes, with fibroelastic connective tissue between them. This muscular tissue is covered with mucous membrane. On the undersurface of the anterior two-thirds of the tongue the mucous membrane forms a fold, the frenulum, extending from near the tip of the tongue to the floor of the oral cavity. In the posterior third of the tongue are located numerous lymph follicles known as the lingual tonsils.

The BASE of the tongue is in direct communication with the base of the epiglottis posteriorly and the palatine arches laterally, while the anterior two-thirds is in direct communication with the floor of the mouth inferiorly.

NOTES:

Most cancers of the base of the tongue are carcinoma, lymphoepithelioma, transitional cell and lymphosarcoma. Rarely are they connective tissue sarcoma or tumors of salivary gland origin.

Lymphosarcomas, usually multiple submucosal lymphoid nodules, are bilateral and nonulcerated. Lymphoepithelioma and transitional cell carcinoma are usually polypoid and unilateral.

There is a male predominance of tumors of the base of the tongue with a male to female ratio of 2.7 to 1. The median age in males is in the 7th decade with a range of less than 10 to over 90 years of age, whereas the median age for females is in the 6th decade with a range from in the 20's to over 90 years of age.

NOTES, continued

Cancer of the anterior two-thirds of the tongue is often multicentric when arising from leukoplakia.

Approximately 80 percent of carcinomas arise on the lateral border.

Approximately 10 percent of carcinomas arise on the dorsum and extend directly toward the floor of the mouth - these cases are the ones which are difficult to establish the exact site of origin, sometimes referred to as "book-leaf" neoplasms.

Approximately 6 percent arise on the tip of the tongue, sometimes with little infiltration, but there is danger of bilateral nodal involvement.

The ratio of males to females is 2 to 1 for the anterior two-thirds of the tongue. The median age for both males and females is in the 7th decade with a range for males from the 20's to over 90 years of age, and in the female from the teens to over 90 years of age.

The PAROTID GLANDS, the largest of the salivary glands, lie below and in front of each ear, molded around the vertical branch of the mandible. The form is irregular and is composed of tubulo-alveolar type tissues encased in a fibrous connective tissue capsule.

The secretions of the parotid gland empty into Stensen's duct which originates in the substance of the parotid gland and terminates in the oral cavity opposite the upper second molar tooth on each side.

Encased within the parotid gland itself are the external carotid artery, the posterior facial vein, and the facial nerve.

The lower-most portion of the parotid lies anteriorly in contact with the postero-superior aspect of the submaxillary gland.

The SUBMAXILLARY GLANDS are approximately one-fourth the size of the parotid gland and are composed of the same type of tissue enclosed in a fibrous connective tissue capsule.

The ducts (Wharton's) empty into the floor of the mouth along side the frenulum of the tongue behind the lower incisors.

Each submaxillary gland lies below a parotid gland with the stylomandibular ligament running between them and is in contact with the mandible.

NOTES:

The majority of the tumors of the parotid gland are benign mixed tumors. Malignant tumors are epidermoid, undifferentiated, and mucoepidermoid carcinomas.

There appears to be an equal proportion of malignant tumors of the parotid gland in both sexes with an average age in the early 50's and a preponderance of women with mixed tumors at an average age 10 years younger.

The submaxillary gland tumors are of the same type as those of the parotid gland, are equally divided among the sexes, and occur at all ages.

No definite etiological factors have been distinguished for the development of tumors of the salivary glands.

The GINGIVA, both upper and lower, are composed of dense fibrous connective tissue closely connected to the periosteum of the maxilla and mandible, respectively. The fibrous connective tissue is covered by smooth and vascular mucous membrane which is noted for its limited sensitivity.

The mucous membrane of the upper gingiva commences and is continuous with that which covers the hard palate, extending over the periosteum of the maxilla between the teeth and ending at the upper gingivobuccal and gingivolabial folds.

The mucous membrane of the lower gingiva commences and is continuous with the mucosa of the floor of the mouth extending over the periosteum of the mandible between the teeth and ending at the lower gingivobuccal and gingivolabial folds.

The retromolar trigone is the small area of mucous membrane lying behind the molar teeth between the upper and lower gingiva.

NOTES:

Carcinomas of the lower gingiva may arise from a preexisting leukoplakia.

Most carcinomas of the lower gingiva are epidermoid and as a rule are rather differentiated. Grossly, they may be one of three types: exophytic, ulcerating, and verrucous. The exophytic type is a cauliflower-like growth, the ulcerating type is usually accompanied by exposure of the bone, and the verrucous type is usually superficial and slow growing.

Tumors of the lower gingiva usually arise in the molar area or the posterior third of the dental arch: sometimes in the premolar area or middle third, but rarely in the anterior third or midline area.

Carcinomas of the upper gingiva are usually papillary and well differentiated, developing in the molar or premolar area but very rarely on the anterior midline.

Verrucous carcinomas have been found on the upper gingiva but are extremely rare.

The BUCCAL MUCOSA forms the lateral walls of the oral cavity and extends from the upper and lower gingivobuccal and gingivolabial gutters to the lips anteriorly and the ramus of the mandible posteriorly.

The cheeks are formed by the continuation of the mucosa covering the upper and lower gingiva with the buccinator muscle forming the second layer. This muscle is covered externally by a thick layer of fat tissue and skin.

The term buccal mucosa generally refers to only the squamous epithelium lining the internal surface of the cheek.

NOTES:

Tobacco, especially chewing tobacco, seems to play a major role in the etiology of carcinoma of the buccal mucosa.

Tumors of the buccal mucosa rather frequently arise from leukoplakia and are most common against the third lower molar, but also arise from the middle of the buccal area and near the commissure. These tumors are generally of three distinct types: exophytic, ulcerating, or verrucous.

Carcinoma in situ may be found on the (1) periphery of an infiltrating carcinoma, (2) removed from the area of infiltration, or (3) as a first manifestation of disease.

Most carcinomas of the buccal mucosa are well-differentiated, and no matter how extensive or invasive, they retain their well-differentiated pattern.

The FLOOR OF THE MOUTH, inferior wall of the oral cavity, is a semilunar area bounded by the lower dental arch anteriorly and the inferior surface of the tongue posteriorly. The mylohyoid muscle separates the floor of the mouth from the suprahyoid region at its inferior depths.

A mucous fold, the frenulum, divides the floor of the mouth in its midline and on each side is the opening of each Wharton's duct commencing from the right and left submaxillary glands.

The sublingual glands and the anterior poles of the submaxillary glands lie below the squamous epithelium which covers the floor of the mouth as well as the rest of the oral cavity.

NOTES:

Floor of the mouth lesions comprise approximately 15 percent of all carcinomas of the oral cavity. They are primarily observed in elderly males, with less than 5 percent in women.

Lesions in this area usually develop submucously on one side or the other of the midline. Moderately differentiated epidermoid carcinomas are the most common.

The HARD PALATE forms the roof of the mouth and separates the oral cavity from the nasal cavity. It is "U" shaped and is bounded by the upper alveolar ridge laterally and anteriorly and the soft palate posteriorly.

The hard palate is composed of stratified squamous epithelium covering the maxilla anteriorly and palatine bone posteriorly.

The SOFT PALATE is a muscular structure commencing from the posterior border of the hard palate and extending back to form the uvula in the midline.

Originating at the base of the uvula and extending downward to near the lateral aspect of the base of the tongue are the anterior pillars of the soft palate, the faucial or glossopalatine arch.

NOTES:

A large portion of tumors of the hard palate are of mucous and salivary gland type developing usually on the posterior half and to one side of the midline.

Epidermoid carcinomas of the hard palate are rare.

Carcinomas of the soft palate are most often seen in men in the 60-75 age group. These tumors are epidermoid and usually well differentiated.

The occasional adenocarcinoma is always of salivary gland origin

The PHARYNX is a vertical tubular passageway, approximately 5 inches long, extending from the base of the skull to the esophagus at the sixth cervical vertebra. Here it becomes continuous with the esophagus. The outer wall consists mostly of skeletal muscle with a mucous membrane inner lining. It is divided into three parts: nasopharynx, oropharynx, and hypopharynx.

The NASOPHARYNX lies behind the nasal cavities and above the soft palate, which forms its floor. Elevation of the soft palate against the posterior pharyngeal wall closes it off completely from the oral part of the pharynx. Anteriorly, it communicates with the nasal cavities. On each lateral wall of the nasopharynx there is an elevation caused by the projecting medial part of the eustachian tube (pharyngo-tympanic). Immediately behind this elevation is the pharyngeal recess, a narrow vertical depression. The salpingo-pharyngeal fold is a ridge of mucous membrane covering the underlying muscle and descending from the lower edge of the tubal elevation to gradually fade out on the lateral pharyngeal wall. The roof of the nasopharynx slopes gradually downwards to merge with the posterior pharyngeal wall. With the exception of the floor of the nasopharynx, which is formed by the upper surface of the soft palate, the walls are practically immovable.

The pharyngeal tonsil, when enlarged referred to as adenoids, consists of a mass of lymphatic tissue in the mucous membrane lining the posterior wall approximately at its center.

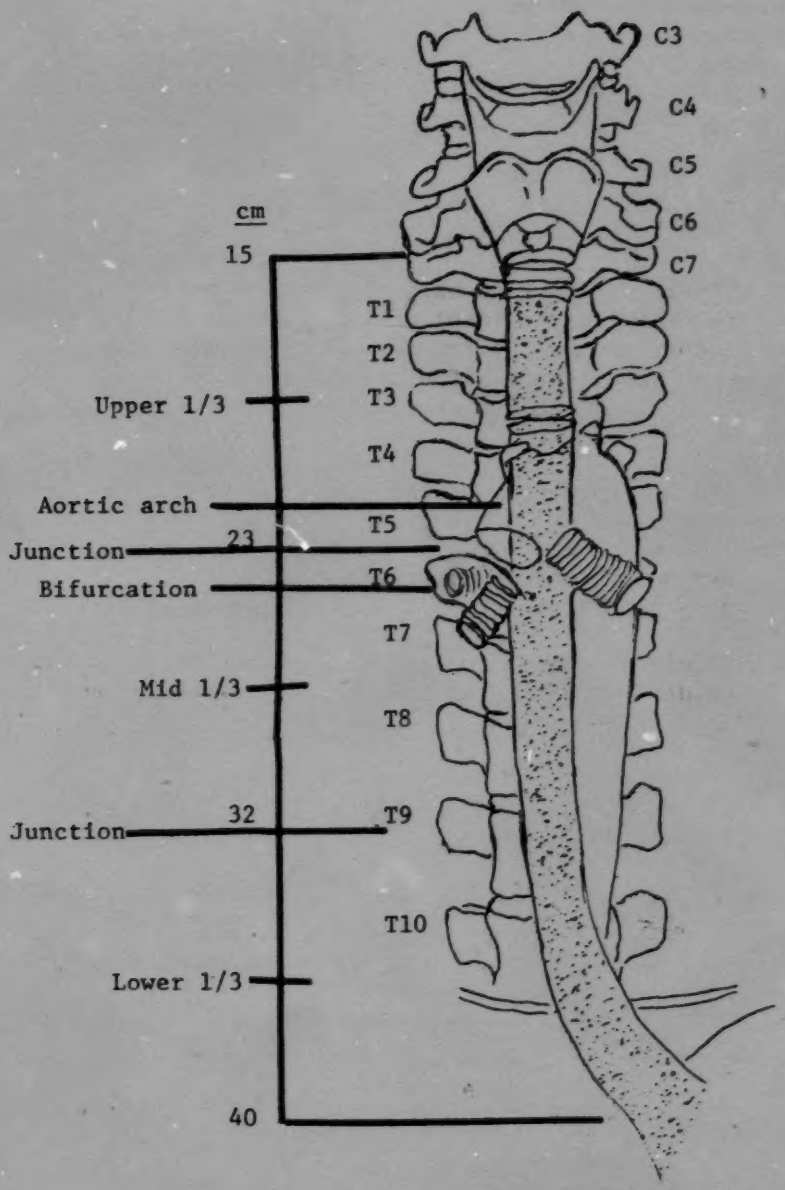
The second division of the pharynx, the OROPHARYNX, lies in direct communication with the mouth through the fauces or archway. The fauces are bounded superiorly by the soft palate, a structure composed of muscle, connective tissue, and mucous membrane; laterally by the glossopalatine arch, and posteriorly by the dorsum or back of the tongue. The palatine tonsils, oval, flat masses of lymphatic tissue covered by epithelium, are located in the lateral walls of the oropharynx. The lingual tonsil, masses of lymphatic tissue over the root of the tongue, are contained within the mucosa of the tongue.

These three sets of tonsils comprise the area known as Waldeyer's tonsillar ring (lingual, palatine, and pharyngeal tonsils).

## SURGERY

| OPERATIVE TERM | DEFINITION |
|---|---|
| Polypectomy | removal of polyp accessible by endoscope |
| Segmental Resection | removal of less than one-half of stomach |
| Proximal Subtotal Gastrectomy | removal of the cardia of the stomach |
| Esophagogastrectomy | segmental resection of the stomach with a portion of the esophagus |
| Subtotal Gastrectomy | The pathology report will usually state the general measurement or the more specific description in centimeters or percentage of gastric tissue in the specimen. |
| Total Gastrectomy | removal of entire stomach including the cardia-esophageal junction (also referred to as the "stump") |

The term RADICAL when used in describing gastric surgery almost always means the removal of a good portion of lymph node bearing areas or portions of contiguous organs. Another term is EXTENDED which has the same meaning. Therefore, you are apt to find the term "radical" or "extended" used in combination with every procedure from segmental resection to total gastrectomy.


C3
C4
C5
C6
C7
cm
15
T1
T2
Upper 1/3
T3
T4
Aortic arch
T5
23
Junction
Bifurcation
T6
T7
Mid 1/3
T8
32
T9
Junction
T10
Lower 1/3
40

I A 10.1

The esophagus is a muscular canal, beginning in the lower pharynx and behind the trachea, extending downward through the mediastinum in front of the vertebral column. It passes through the diaphragm and into the cardia orifice of the stomach (cardioesophageal junction). The esophagus is about 23-25 cm in length (9-10 inches).

The wall of the esophagus has four coats:

1. the external or fibrous coat - an outer connective tissue layer

2. the muscular coat - a superficial longitudinal layer and an inner circular layer

3. the areolar or submucous coat - contains blood vessels, nerves, and mucous glands and loosely connects the mucous and muscular coats

4. the internal or mucous coat - a many-layered epithelium with its surface studded with minute papillae

NOTES:

The most common tumor of the esophagus is the infiltrating or scirrhous form which grows around the esophagus, producing stenosis and obstruction of the lumen. Polypoid is the least common.

Tumors of the esophagus are always epidermoid except at the junction of the esophagus and stomach where they may be adenocarcinoma. Tumors of the esophagus may also show both squamous and adeno elements.

Submucosal infiltration may sometimes be the cause of pallor of the mucous membrane and a verrucous appearance. (There is frequent reference to this condition of the membrane.)

A scirrhous carcinoma may cause considerable formation of connective tissue, and a compensating dilatation occurs on the segment of normal esophagus proximal to the tumor (often a part of the barium flow report).

## RADIATION

In the case of lymphosarcoma, supervoltage roentgenograph or cobalt has been administered as a single procedure, or as a postoperative therapy.

## CHEMOTHERAPY

To date chemotherapy has not proved to be very effective in the treatment of stomach cancer, but combination drugs in the treatment of unresectable carcinomas have been helpful in palliative treatment.

The lowest division, the HYPOPHARYNX, extends from the hyoid bone down to the lower border of the cricoid cartilage where it is continuous with the esophagus. It lies behind the larynx and on each side of the laryngeal orifice is a recess, the pyriform sinus. These pyriform sinuses are bounded medially by the aryepiglottic fold, laterally by the thyroid cartilage, and thyrohyoid membrane.

NOTES:

Tumors of the nasopharynx have been estimated as between 0.5 percent and 1 percent of all cases of cancer. The malignant tumors are most often found in patients 40-45 years of age, with approximately two-thirds occurring in males.

Primary carcinoma of the tonsil is most frequently found in men in the 60-75 age group.

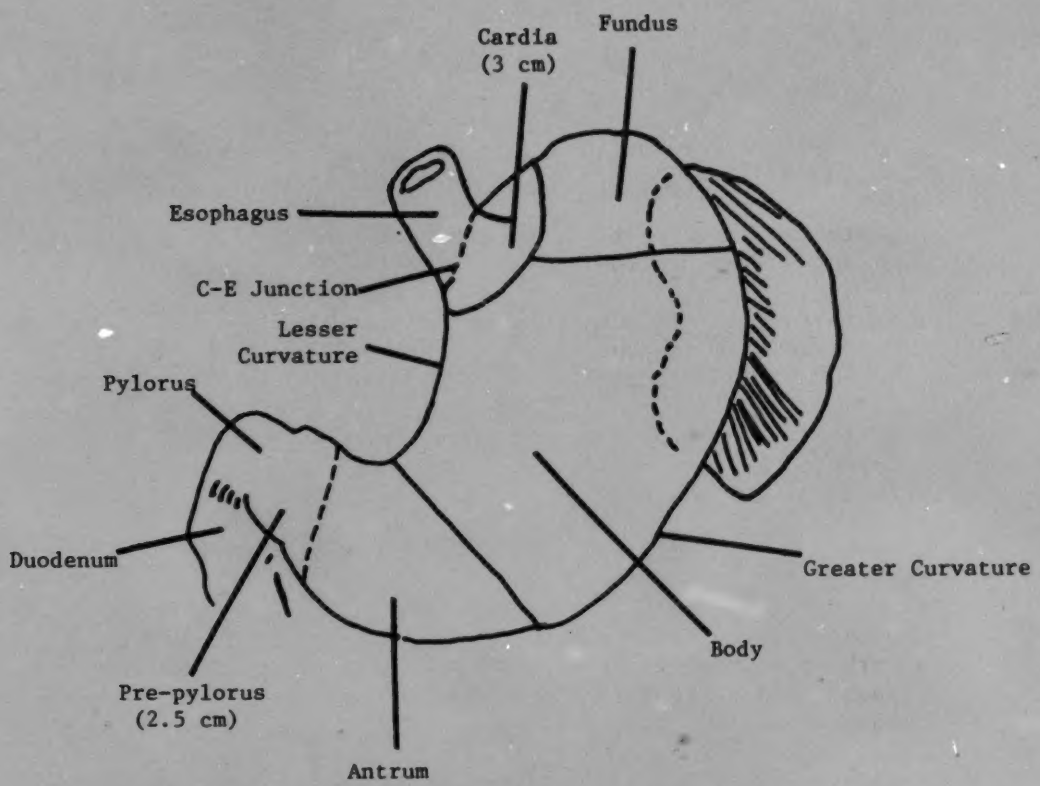
Lymphosarcomas are more often found in the 30-40 age group, one-third of which will occur in women.

Carcinomas of the walls of the oropharynx are predominantly epidermoid and occur in men in the 50-60 age group.

The majority of malignant tumors of the hypopharynx are epidermoid carcinomas, many undifferentiated.

These tumors occur mostly in men between 40 and 60 years of age.

Diagram of Stomach Showing Subdivisions




---From Chalktalk
June, 1963 Workshop

I A 11.1

The stomach lies just below the diaphragm on the left side of the upper abdomen. The shape and position of the stomach are so modified by changes within itself and in the surrounding organs that no one form can be described as typical.

The stomach communicates with the esophagus at the CARDIAC ORIFICE (cardioesophageal junction) and with the duodenum at the PYLORIC ORIFICE. The stomach is customarily divided into the FUNDUS, CORPUS (body), PYLORIC ANTRUM, and PYLORIC CANAL (see illustration).

The wall of the stomach has four coats:

1. the serous coat covers the organ and is part of the peritoneum;

2. the muscular coat, closely connected with the serous coat, consists of three layers:

   a) outer, or longitudinal, layer is continuous superiorly with longitudinal fibers of the esophagus;

   b) middle, or circular, layer completely surrounds the stomach;

   c) inner, or oblique, layer is located mostly at the cardiac end of the stomach;

3. the submucous coat, containing some of the blood vessels, nerves, and lymphatics, consists of loose areolar connective tissue;

4. the mucous coat, in longitudinal folds, is an epithelial covering containing many tubular glands. The glands are of three different types named after their location --- the cardia, the fundus, the pylorus.

NOTES:

There has been a remarkable decrease in the incidence of stomach cancer in the United States, but true cause or causes have not been identified.

Tumors of the stomach are usually of three main forms: polypoid or papillary, ulcerating, or scirrhous or infiltrating. A gelatinous or mucoid type may also be found.

NOTES, continued:

The scirrhous cancer is characterized by very abundant connective tissue stroma. It spreads chiefly in the stomach wall and adjacent draining nodes.

About 1/5 of all gastric lesions occur in the pyloric region and are usually localized scirrhous or ulcerative. Linitis plastica is rare, only about 5 percent.

About 8 percent of all stomach cancers are of the body, fundus, or cardia. They are usually soft, papillary tumors projecting into the cavity and are adenocarcinoma or carcinoma simplex. These tumors may be relatively slow growing, infiltrating submucosa and muscularis, and large before symptoms appear.

Tumors beginning at the pylorus tend to encircle this region and extend proximally. Obstruction of the pylorus is usually seen and sometimes the whole stomach wall is involved.

Left supraclavicular nodes are frequently invaded.

The wall is composed of four coats:

1. the serous coat, composed of peritoneum, almost completely covers the entire tube, except for a part of the duodenum;

2. the muscular coat has two layers--an outer, thinner, longitudinal; and an inner, thicker, circular (thus aiding peristalsic action);

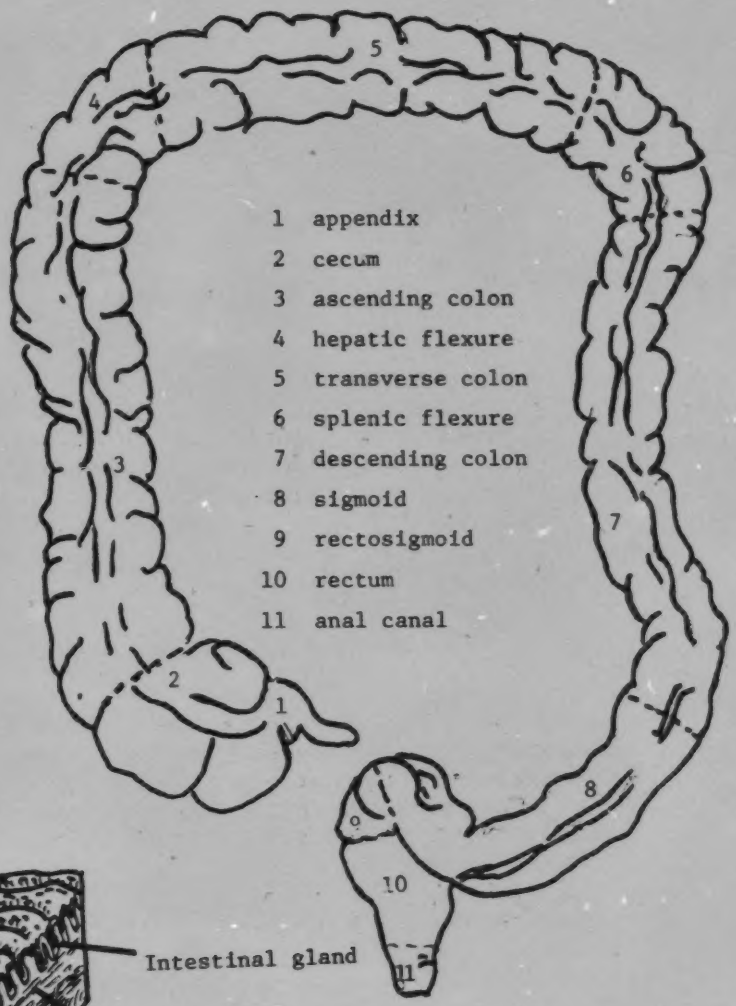
3. tne submucous coat is composed of areolar connective tissue.

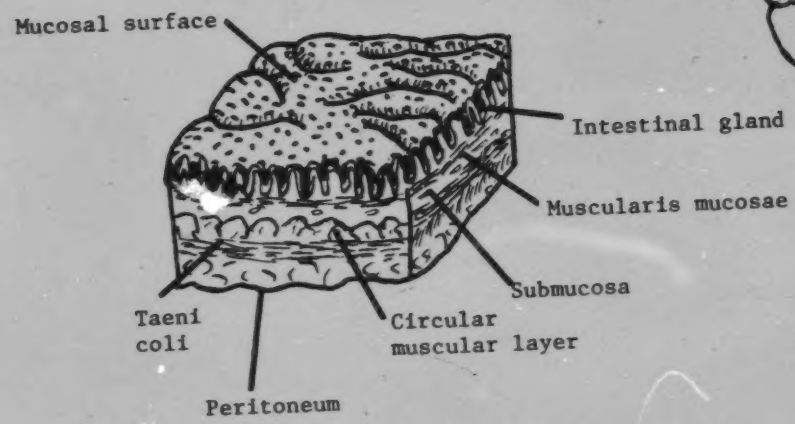
4. the mucous coat is thick, very vascular, and arranged in circular folds. About the middle of the jejunum they begin to decrease in size, and almost disappear at the lower part of the ileum.

NOTES: -

Although malignant lesions are rare, they do occur. Adenocarcinoma and lymphosarcoma are the most common. Approximately 50 percent of the adenocarcinomas originate in the jejunum and 30 percent in the duodenum. Lymphomas are usually located in the terminal part of the ileum as are malignant carcinoids.

Benign carcinoids may originate in any part of the small intestine. They are more infrequent that those of the appendix.


1 appendix
2 cecum
3 ascending colon
4 hepatic flexure
5 transverse colon
6 splenic flexure
7 descending colon
8 sigmoid
9 rectosigmoid
10 rectum
11 anal canal


Mucosal surface
Intestinal gland
Muscularis mucosae
Submucosa
Taeni coli
Circular muscular layer
Peritoneum

I A 13.1

31

The LARGE INTESTINE, about 5 feet in length, extends from the end of the ileum to the anus. It is largest at the cecum, gradually diminishing as far as the rectum, where there is a dilatation of considerable size just above the anal canal.

The ILEOCECAL VALVE lies at the upper border of the cecum and permits the passage of material into the large intestine, but prevents the passage of material in the opposite direction.

The CECUM, about 6 cm long, is a blind pouch situated below the ileocecal valve. In most cases it is entirely covered by peritoneum, but this is variable.

The APPENDIX, from 3 to 5 inches long, is attached to the end of the cecum and may pass in one of several directions. It usually has a distinct lumen and normally is completely covered by peritoneum.

The ASCENDING COLON extends from the cecum, in front of the gallbladder, to the undersurface of the liver where it bends sharply to the left to form the HEPATIC FLEXURE. Its ventral surface and sides are covered by peritoneum.

The TRANSVERSE COLON, from the hepatic flexure, arches to cross the upper abdominal cavity from right to left, where it curves sharply upon itself beneath the lower end of the spleen and forms the SPLENIC FLEXURE. It is enveloped in peritoneum and is suspended from body wall by transverse mesocolon.

The DESCENDING COLON passes downward from the splenic flexure on the posterior abdominal wall to the level of the iliac crest, where it turns toward the midline to join the sigmoid colon. It is covered ventrally and on sides by peritoneum.

The SIGMOID COLON continues from the descending colon, crossing the sacrum and curving to midline at the level of the third sacral segment to form the rectosigmoid. It is usually enveloped with peritoneum and has a mesocolon.

The RECTOSIGMOID JUNCTION is indicated by a slight constriction caused by a functional sphincter which controls the passage of contents into the rectum.

The RECTUM, commencing at the rectosigmoid junction, descends to slightly below the coccyx, bending posteriorly to become the anal canal. The peritoneum covers the front and sides of the upper third of the rectum and the front of the middle third. The lower third is devoid of peritoneum. The rectum is surrounded by a dense tube of fascia, loosely attached to the rectal wall by areolar tissue in order to allow distension.

The ANAL CANAL, the terminal portion of the large intestine, ends at the external sphincter, the ANUS. It measures from 2.5 to 4 cm in length and has no peritoneal covering.

The large intestine has four coats:

1. the serosa consists of visceral peritoneum. This forms little pouches containing fat, which hang from the large intestine;

2. the muscular coat has two layers: an outer layer composed of three flat, longitudinal bands about equally spaced; an inner layer composed of circular fibers;

3. the submucous coat is a rather uniform layer of areolar connective tissue;

4. the mucous coat is smooth and covers the inner surface in a coat of uniform thickness.

NOTES:

Carcinoma of the colon is second only to lung cancer as a cause of death.

The most common cancer of the large intestine is adenocarcinoma arising from the glandular mucosa.

Squamous cell carcinoma (acanthoma) originates in the anal canal lining of squamous epithelium or sometimes in the lower part of the rectum.

NOTES, continued:

Adenoacanthomas are carcinomas which contain both glandular and squamous elements. This is not to be confused with the "collision tumor" which describes a separate squamous cell carcinoma and an adenocarcinoma which grow until they connect.

Annular and constricting lesions are often ulcerative, encircling the bowel, thickening and contracting the wall and narrowing and obstructing the lumen.

The papillary variety grows as a bulky mass projecting into the bowel lumen with obstructive symptoms. Necrosis and infection and inflammatory lymphadenitis are common.

Malignant melanomas are predominantly at the anorectal junction or in the anus. They are often polypoid or pedunculated and highly malignant.

Malignant carcinoids usually originate in the appendix.

DUKE'S PATHOLOGIC CLASSIFICATION OF CARCINOMA OF LARGE INTESTINE: (not infrequently noted on pathology reports)

A Wall involvement but no spread beyond the serosa, no vein invasion, no perineural sheath invasion, no regional lymph node involvement.

B Wall involvement with spread beyond the serosa, but no vein invasion, no perineural sheath invasion, no regional lymph node involvement.

C Spread through the wall, metastases to regional lymph nodes, vein invasion, perineural sheath invasion.

The liver, the largest organ in the body, is about 10 inches wide and weighs three-four pounds. It occupies the right hypochondriac and epigastric regions (upper right quadrant of the abdominal cavity), but sometimes extends into the left hypochondriac region. The upper part of the organ is attached to the diaphragm by ligaments, and the undersurface is in relation to the right kidney, the upper portion of the ascending colon, and the pyloric end of the stomach.

A large triangular surface of the liver is devoid of peritoneal covering and is named the "bare area" of the liver. It is attached to the diaphragm by areolar tissue.

The liver is divided by four fossae (or fissures) into four lobes. The two main lobes are the right and the left which are separated by the falciform ligament. The right lobe is sub-divided into right lobe proper, quadrate (square) and caudate (tail-like).

NOTES:

Carcinoma of the liver is also known as hepatocarcinoma.

"Nodular" liver when referring to primary carcinoma of the liver refers to various circumscribed tumor nodules present throughout the liver.

A massive carcinoma of the liver refers to a single large tumor.

Diffuse involvement of a primary liver carcinoma refers to tumor cells found extensively invading every part of the liver.

Intrahepatic spread is the most common, but extrahepatic metastases are not unusual.

The pancreas lies in front of the first and second lumbar vertebrae and behind the stomach.

The HEAD (or right end) is thicker than the rest of the organ and fills the loop formed by the middle portion of the duodenum, to which it is attached. The TAIL (left end) reaches to the spleen and is in contact with it, but free. The portion intervening is the BODY.

The entire organ measures 20-25 cm (7-9 inches) and is covered by a thin layer of connective tissue, but not in a definite capsule form.

The pancreas is a compound gland - a "double gland" - consisting of an exocrine portion and an endocrine portion. The gland is formed by lobes composed of lobules bound together by loose connective tissue.

NOTES:

Cancer of the pancreas constitutes the fourth leading cause of cancer deaths in the United States. It is steadily increasing in frequency, but the etiology remains unknown.

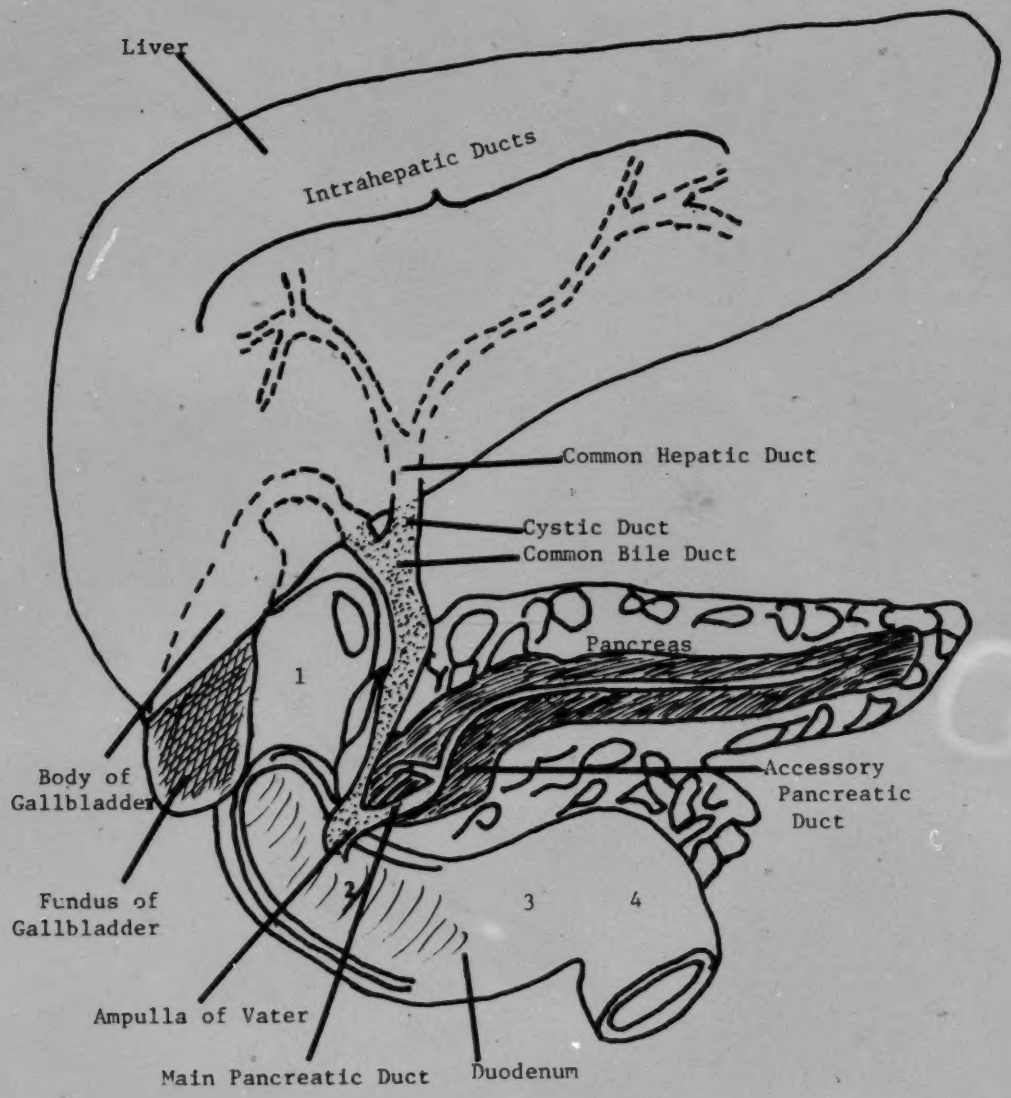
There seems to be a predominance of cancer of the pancreas in males, especially in those under the age of 50.

Biopsy of the pancreas is generally not done because of severe complications so often following incision into the pancreas. During laparotomy a biopsy of an apparently involved neighboring tissue is accomplished in order to definitely establish a diagnosis of cancer.

HEPATIC DUCT SYSTEM

The hepatic duct system, or biliary tract, is composed of the hepatic ducts, gallbladder, cystic duct, and common bile duct.

Biliary System in Relation to Duodenum

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I B 1

The gallbladder, a pear-shaped sac 3-4 inches long, is composed of smooth muscle lined with mucous membrane. It is located on the undersurface of the liver and is partially covered by peritoneum.

The gallbladder has three coats:

1. The serous or external coat is derived from the peritoneum, completely covering the fundus, but only on the undersurfaces of the body and neck.

2. The fibromuscular coat is thin, but consists of dense fibrous tissue.

3. The internal or mucous coat, loosely connected with the fibrous layer, is continuous through the hepatic duct with the mucous membrane lining the ducts of the liver, and through the common bile duct with the mucous membrane of the duodenum.

NOTES:

90 percent of all gallbladder tumors are adenocarcinomas, but occasionally a squamous or mixed cell type will appear.

65 percent are infiltrating adenocarcinomas forming firm tumors which spread widely through the gallbladder wall. The lumen is narrowed and eventually obliterated.

22 percent are papillary adenocarcinomas forming a friable fungating mass which grows into the lumen. These are less malignant and slower in growth and spread.

7 percent are mucoid adenocarcinomas forming a bulky gelatinous mass.

Squamous cell carcinoma arises on epithelial lining on the basis of metaplasia.

The HEPATIC DUCT is formed by the union of the two intrahepatic ducts, one from the right lobe and one from the left lobe of the liver. It joins the CYSTIC DUCT (from the gallbladder) to become the COMMON BILE DUCT.

The hepatic duct is about 4 cm long and about 4 mm in diameter. The cystic duct is an arched tube about 3.5 cm in length and 3 mm in diameter. The common bile duct is about 7.5 cm in length and 6 mm in diameter.

The common bile duct is closely associated with the terminal portion of the pancreatic duct as it passes obliquely through the muscular and mucous coats of the duodenum for about 1 to 2 cm. In approximately 60 percent of individuals, the common bile duct and the pancreatic duct join to form a final common passage called the AMPULLA OF VATER (more properly referred to as papilla of VATER).

NOTES:

Tumors of the extrahepatic bile ducts are rare. Most of these tumors are found in the junction of the common bile duct, cystic and common hepatic duct, and then in the lower end of the common bile duct.

Lesions may be papillary or flat and ulcerated. They are slow-growing, but all spread to invade contiguous tissue.

The chief organs of the respiratory system are the nose, larynx, trachea, bronchi, and lungs.

The LARYNX is a tubular structure, lined with mucous membrane continuous with the pharynx and the trachea. The larynx, shaped somewhat like a triangular box, is composed of nine cartilages which are joined together by ligaments and by skeletal muscles.

The three single cartilages are:

- cricoid - ring-shaped and is at the lower end of the larynx and is connected with the trachea
- thyroid - shield-shaped and consisting of two broad plates (right and left) which are fused at an acute angle in the midline in front. This is the largest cartilage.
- epiglottis - leaf-shaped with the stem in the notch of the thyroid cartilage. The aryepiglottic folds of mucous membrane are attached to the sides of this elastic cartilage which covers the glottis

The paired cartilages are:

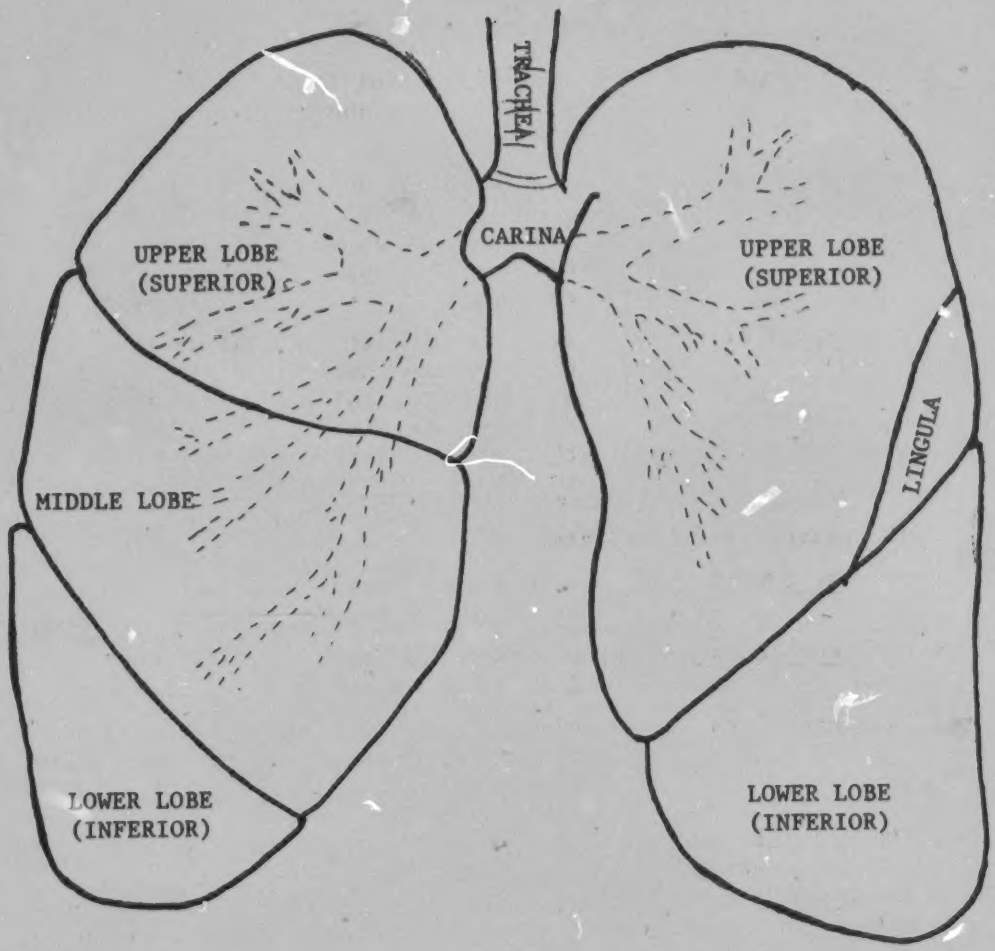
- arytenoid - cone-shaped, resting on each side of the cricoid cartilage.
- corniculate - elastic cartilage, partially covering the arytenoid cartilages.
- cuneiform - elastic cartilage, in the aryepiglottic folds, anterior to the corniculate cartilages.

The cricoid, thyroid, and arytenoid cartilages are hyaline.

The glottis is an elongated fissure formed by two folds of mucous membrane projecting from each side. At the edges of the glottis are the true vocal cords, right and left, which are ligaments covered with mucous membrane. The two ventricular bands (false vocal cords) are above the true vocal cords and separate the ventricle from the vestibule.

Extrinsic ligaments connect the thyroid cartilage and the epiglottis with the hyoid bone and the cricoid cartilage with the trachea. Intrinsic ligaments connect the cartilages of the larynx with each other.

LUNG, BRONCHUS, TRACHEA
(anterior view)



The RIGHT MAIN BRONCHUS is about 2.5 cm long and enters the right lung nearly opposite the fifth thoracic vertebra. It divides into three subsidiary bronchi and subdivides into bronchioles within the lobes of the lung.

The LEFT MAIN BRONCHUS, about 5 cm in length, divides into two branches and subdivides into bronchioles within the lobes of the lung.

Each lung lies free in the thoracic cavity, being attached only by the root and the pulmonary ligaments. They are cone-shaped, presenting an outer surface which is convex, a base which is concave to fit over the convex portion of the diaphragm, and an apex which extends about 3 cm above the level of the sternal end of the first rib.

The LEFT LUNG is smaller than the right lung, being more narrow but longer. Its two lobes (upper and lower) are divided by the lingula, which is formed by the lower region of the upper lobe and the superior and medial regions of the lower lobe.

The RIGHT LUNG, larger and broader and shorter than the left, is divided by fissures into three lobes (upper, middle, lower).

Each lobe of a lung is composed of many lobules, and into each lobule a bronchiole enters and terminates in an atrium. Each atrium contains a series of air cells, or alveoli, (approximately 700,000,000 in number).

NOTES:

Lung cancer is now the most common malignant disease in males in both the white and black population.

Malignant neoplasms are more frequent in the right lung than in the left lung (approximately 60 percent).

The three groups of bronchogenic carcinoma are grouped pathologically as squamous cell carcinoma, adenocarcinoma and undifferentiated carcinoma. This last group includes giant cell carcinoma, oat cell carcinoma and others which could not be classified as epidermoid carcinoma or adenocarcinoma.

The trachea, sometimes called the windpipe, is about 11 cm in length and 2-3 cm in diameter. It extends from the lower part of the larynx, on a level with the sixth cervical vertebra to the upper border of the fifth thoracic vertebra. At this point, the carina, a ridge across the bottom of the trachea, divides into the two bronchi, one for each lung. The walls are composed of rings of cartilage embedded in fibrous tissue and it is lined with mucous membrane which extends into the bronchial tubes.

The tissue comprising the trachea consists of four layers:

1) the mucosa which is the inner layer of stratified epithelium
2) the submucosa which is connective tissue with numerous glands which secrete mucus
3) the cartilage layer which encloses smooth muscles
4) the adventitia is the dense connective tissue continuous with the surrounding connective tissue

NOTES:

Carcinomas of the trachea are most common in late adulthood, and are more frequent in men.

The most common tumor is squamous cell carcinoma, comprising about 40 percent of the cases. The second most common type of malignant tumor of the trachea is the cylindroma which apparently arises from the mucous glands in the wall of the trachea. Adenocarcinoma is the smallest group, seems to originate from the surface mucosa, and is highly malignant.

The PLEURA, a serous membrane, envelops each lung, covering a portion of the surface of each lung and dipping into the fissures between the lobes. This is the pulmonary, or visceral, pleura. The rest of this membrane lines the inner surface of the chest wall, covering the diaphragm, and reflects over the structures occupying the middle of the thorax. This is the parietal pleura.

The MEDIASTINUM lies between the left and right pleurae in the median plane of the chest. It extends from the sternum to the spinal column and is entirely filled with the thoracic viscera.

NOTES:

The most frequent malignancies of the mediastinum are lymphosarcomas and neuroblastomas.

SURGERY

| | |
|---|---|
| Wedge Resection | removal of an anatomical segment of a lobe or lingula |
| Segmental Resection | removal of a surgical segment within a lobe |
| Lobectomy | removal of one lobe |
| Bileobectomy | removal of two lobes of a lung, usually in continuity |
| Pneumonectomy | removal of an entire lung |

The term lobectomy has usually been used without a qualifying adjective, but the trend is changing. A simple lobectomy is defined as an operation restricted to the excision of a lobe, or even two lobes without removal of lymph nodes. A radical lobectomy is an operation in which one or two lobes of a lung are excised in a bloc dissection with the regional hilar and mediastinal lymph nodes.

The qualifying adjectives are used in the same fashion to describe the pneumonectomy. They do not infer an operation of great magnitude in which adjacent thoracic structures, such as the chest wall or diaphragm are added to the excised organ. When these are included as a "right upper lobectomy with excision of three, four, or five ribs". However, the excision of ribs may be the surgical approach and not actually considered surgical therapy.

## RADIATION

Radiation is used in the treatment of lung cancer by the following methods:

1. In pre-operative radiation, the objective is to reduce the number of tumor cells (the size of the tumor) and, in some instances, a case considered inoperable has been made operable.

2. The utilization of radiation post-operatively is intended to sterilize any residual tumor and to irradiate areas not reached by the surgical act, i.e., direct extension or lymph nodes.

3. Radiation as a palliative measure is prescribed to inhibit the rate of growth of tumor cells as well as to alleviate - or retard - distressing symptoms.

4. Intrapleural radioactive gold or other element is sometimes effective in reducing malignant pleural effusion.

## CHEMOTHERAPY

Nitrogen Mustard ($HN^2$) is used extensively in the treatment of lung cancer. Temporary relief of symptoms of superior vena cava obstruction is of short benefit, but the treatment may be repeated. When administered systemically (intravenously) it is usually an adjunct to radiation therapy.

Nitrogen Mustard may also be administered intracavitarily for the treatment of pleural effusion.

The circulatory, or cardiovascular, system consists of the heart, the blood vessels and the blood.

The largest arteries in the body, the aorta and pulmonary artery, measure over 3 cm in diameter at their connection with the heart. These arteries divide into branches and then subdivide into smaller branches which are called arterioles. Here, at the end of the arterioles, begin the capillaries.

An artery is composed of three coats:

1. the outer coat, or adventitia, consisting of connective tissue and elastic fibers

2. the middle coat, or tunica media, consisting of layers of muscle fibers and alternate layers of elastic fibers

3. the inner coat, or tunica intima, lined with epithelium and containing collagenous and elastic fibers

A vein is structured similar to the artery, except that there are no elastic fibers and the wall is much thinner. Many of the veins are provided with valves which are formed by semi-lunar folds of the internal coat of the veins. The smaller branches of the vein are called venules.

A capillary is exceedingly small (about the size of a red cell). The walls of the capillaries consist of one layer of endothelial cells which is continuous with the layer lining the arteries, veins, and the heart.

The network of the capillaries connect the arterioles with the venules.

The LYMPHATIC SYSTEM is an accessory part of the Circulatory System. In nearly every part of the body connective tissue serves as the origin of the lymph vessels. These vessels, LYMPH CAPILLARIES, begin as microscopic channels and are distributed in the same manner as the blood capillaries, i.e., continuous with larger and larger vessels. They converge into the thoracic duct (left lymphatic duct) and right lymphatic duct.

There are no lymphatic capillaries in the central nervous system, the eyeball and orbital fat, the cornea, the internal ear, cartilage, subcutaneous tissue, epidermis, or bone marrow. Muscles are devoid of lymphatics, but they are present in the fascia which encloses and divides the muscles. Lymphatics are not found in the liver, but they surround the organ.

The thoracic duct extends from the level of the second lumbar vertebra to the root of the neck. It begins in the cisterna chyli, passes with the aorta through the diaphragm and ends by opening into the angle of the junction of the left subclavian and the left internal jugular veins.

The right lymphatic duct, only 1.25 cm. long (and sometimes not present), ends at the junction of the right subclavian and the right internal jugular vein.

The larger lymph vessels have three coats:

(1) outer coat - consists of connective tissue fibers arranged longitudinally, and a few elastic fibers

(2) middle coat - a circular smooth muscle, present in larger vessels, but absent in smaller lymph vessels

(3) inner coat - an elastic layer of longitudinal thread-like structures and endothelial lining.

In the course of the larger lymph vessels there are clusters of lymphoid tissue called LYMPH NODES (sometimes called lymph glands). They vary considerably in size (from 2 millimeters to 3-4 centimeters) and are superficially situated in subcutaneous tissue accompanying the superficial veins or deeply located in association with the deep large blood vessels.

Lymph nodes usually occur in chains of two to twelve, although occasionally a node will exist alone. Groups of lymph nodes are found in the head, face, neck, thoracic regions, armpits, lower limbs and groins, and pelvic and abdominal regions.

NOTES:

Many organs of the body can be the primary site of Hodgkin's disease, but the vast majority of cases of this malignancy seem to originate in the lymph nodes.

Cancer spreads by way of the lymphatic system in two ways:

(1) by permeation - tumor infiltrates the exceedingly thin walls of the lymphatics and then grows contiguously within the vessels to the regional lymph nodes. Perineural lymphatics of small nerves are often involved in this manner.

(2) by metastasis - cancer cells growing in the lymphatic vessels separate and, as emboli, move along in the lymph flow to regional lymph nodes. This is the more frequent mechanism.

The chief lymphoid organ is the SPLEEN, which lies below the left side of the diaphragm and behind the fundus of the stomach. Changes in size and weight of the spleen are likely at different periods of life, in different individuals, and in the same individual under different conditions. It rests against the stomach, the splenic flexure of the colon, the left kidney and suprarenal gland.

The spleen is almost entirely surrounded by peritoneum and is firmly adherent to the capsule. Two ligaments derived from the peritoneum - the phrenicolienal ligament and the gastrolienal ligament - hold the organ in place during respiration.

The spleen has two coats:

(1) external, or serous coat, derived from peritoneum and investing the entire organ except at the hilum and along the lines of reflection of the ligaments.

(2) internal, or fibroelastic coat, invests the organ, and is reflected inward upon the vessels in the form of sheaths. Numerous small fibrous bands, trabeculae, are formed and constitute the framework of the spleen.

The small spaces formed by the traveculae are called areoles, and contain the splenic pulp which consists of vascular lymphatic tissue.

Lymphatic vessels are found only in the capsule and the larger trabeculae.

NOTES:

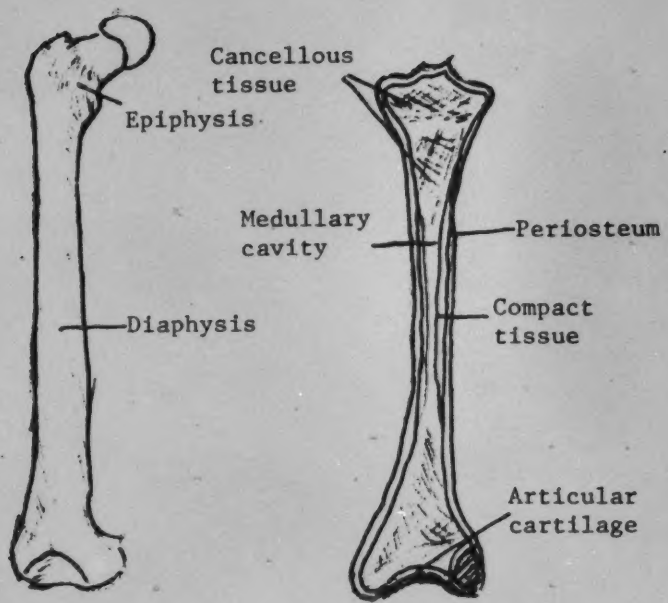
Primary tumors of the spleen are rare, but when they do occur are more commonly lymphosarcomas.

Pathologic changes in the spleen occur in all forms of leukemia.

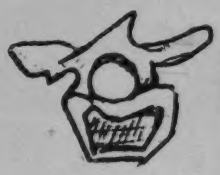
About 75% of Hodgkin's disease cases are found, at autopsy, to have involvement of the spleen in the form of nodular masses.

The bones of the body, with their blood and nerve system, constitute the organs of the skeletal system.

Bones form the skeletal support of the body, provide a leverage system making movement possible; serve as a basis for attachment of muscles, tendons, and ligaments; protect the vital organs of the cranial and thoracic cavities; supply calcium and phosphorus to the boood, and contain the bone marrow which is important in the formation of blood cells.




LONG BONES



VERTERBRA

All bones are completely covered with PERIOSTEUM, except over the joints. The periosteum consists of two layers - an internal vascular layer composed of arteries, lymphatics, and nerves, and the external layer of dense connective tissue.

There are 206 bones in the skeleton of the adult, and they are classified as long, short, flat, and irregular.

LONG BONE -

This bone consists of a main shaft (the diaphysis) and the thickened ends (the epiphyses). The cartilage plates that form the joint surfaces are united to the shaft by columns of spongy bone called the metaphyses or epiphyseal plates. Examples: humerus (upper arm), femur (thigh).

SHORT BONE -

This bone has a thin cortex, an interior of cancellous tissue, and is cuboidal in shape. Examples: carpal (wrist), tarsal (ankle).

FLAT BONE -

This bone consists of a thin layer of cancellous tissue between two plates of thin cortex. Example: parietal bone of the skull.

IRREGULAR BONE -

Any bone other than these three categories is classified as irregular. Example: vertebra (spine).

BONE MARROW fills the cavities of the bone. Shafts of long bones are hollowed out to form the medullary canal (endosteum). The medullary membrane, a vascular tissue, lines the endosteum and contains bone-forming cells. In addition, the irregular spaces occurring in spongy bone are also filled with marrow. There are two types of marrow: yellow and red. Yellow marrow consists of a larger amount of connective tissue, abundant fat cells and fewer hematopoetic cells. It is normally found in the shafts of the long bones. Red marrow consists of a small amount of connective tissue containing blood vessels, myelocytes, erythroblasts (the derivation of red blood cells), giant cells, and a few fat cells. Bones containing red marrow include bones of the skull, ribs, the sternum, the clavicle, the vertebrae, and the pelvic bones.

NOTES:

Malignancies of the bone represent less than one percent of all malignant tumors. The term "tumors of the bone" usually includes all neoplasms derived from the cells of the periosteum, the bone, and the bone marrow (exclusive of the leukemias).

Osteogenic sarcoma arises in the periosteum or endosteum and has its greatest incidence between the ages of 10 and 30 years. Other terms for this cancer are osteosarcoma, osteochondrosarcoma, chondrofibromyxoma, etc.

Fibrosarcomas arise from the external parts of the periosteal tissues and occur most frequently in males of early adult life.

Multiple myeloma, a highly malignant tumor of bone marrow, arises simultaneously in multiple sites or spreads rapidly to involve more than one bone. Myeloma occurs later in life than other bone tumors, usually over 50 years of age.

Ewing's sarcoma (endothelial myeloma) starts in the medulla but rapidly invades and expands the bone. It involves the shaft of a long bone and occurs in childhood or adolescence.

AXIAL SKELETON

8 Cranium (skull)
- 1 occipital (base of skull - back part of head)
- 2 parietal (top of skull, crown of skull)
- 1 frontal (forehead)
- 2 temporal (region of ear - side of head; left and right)
- 1 ethmoid (between cranial and nasal cavities)
- 1 sphenoid (base of brain and back of eye socket)

1 Hyoid bone (between root of tongue and larynx)

14 Bones of Face
- 2 nasal (bridge of nose; left and right)
- 1 vomer (back part of nasal cavity)
- 2 inferior nasal concha (outer wall of each nostril)
- 2 lacrimal (front part of inner wall of eye socket, left & right)
- 2 zygomatic (cheek bone; left and right)
- 2 palatine (part of the roof of the mouth)
- 2 maxilla (upper jawbone; left and right)
- 1 mandible (lower jawbone)

6 Auditory ossicles

33 Vertebral column (spinal column)

| NECK | DORSAL | LOW BACK |
|---|---|---|
| 1st cervical | 1st thoracic | 1st lumbar |
| 2nd cervical | 2nd thoracic | 2nd lumbar |
| 3rd cervical | 3rd thoracic | 3rd lumbar |
| 4th cervical | 4th thoracic | 4th lumbar |
| 5th cervical | 5th thoracic | 5th lumbar |
| 6th cervical | 6th thoracic | sacrum coccyx (tailbone) |
| 7th cervical | 7th thoracic | |
| | 8th thoracic | |
| | 9th thoracic | |
| | 10th thoracic | |
| | 11th thoracic | |
| | 12th thoracic | |

24 Ribs and sternum

| LEFT AND RIGHT | FLOATING RIBS |
|---|---|
| 1st rib | 11th rib |
| 2nd rib | 12th rib |
| 3rd rib | |
| 4th rib | |
| 5th rib | |
| 6th rib | |
| 7th rib | |
| 8th rib | |
| 9th rib | |
| 10th rib | |

Sternum (breastbone)

APPENDICULAR SKELETON

64 Upper Extremities, left and right

| | | |
|---|---|---|
| 2 | clavicle | (collarbone) |
| 2 | scapula | (shoulder blade) |
| 2 | humerus | (bone of upper arm) |
| 2 | ulna | (elbow bone, inner side of forearm) |
| 2 | radius | (small bone of forearm) |
| 16 | carpus | (small bones of wrist) |
| 10 | metacarpal | (body of hand) |
| 28 | phalanges | (2 in each thumb, 3 in each finger) |

62 Lower Extremities, left and right

| | | |
|---|---|---|
| 2 | pelvis: | ilium (top of hipbone)<br>ischium (bone upon which body rests when sitting)<br>pubis (front of bone, forming pelvis) |
| 2 | femur | (thighbone) |
| 2 | patella | (kneecap) |
| 2 | tibia | (shinbone; the weightbearing bone) |
| 2 | fibula | (small bone of calf) |
| 14 | tarsus | (bones of the instep, ankle, and heel) |
| 10 | metatarsus | (bones of the sole and lower instep) |
| 28 | phalanges | (2 in each great toe; 3 in others) |

206 bones in the adult skeleton

The soft tissues are the connective tissues and fat, the blood and lymphatic vessels, the smooth and striated muscles, and the synovial tissues.

ADIPOSE TISSUE is a form of connective tissue consisting of fat cells lodged in areolar tissue and arranged in lobules along the course of small blood vessels.

This tissue is found under the skin, surrounding some organs and between others. It also serves a padding around joints a and is present in the marrow of long bones.

NOTES:

Liposarcoma arises in adipose tissue. The gluteal region, thighs, popliteal and retroperitoneal regions are the usual sites.

Cartilage is not supplied with nerves or blood vessels. It is sometimes called "skeletal cartilage" when it is in immediate connection with bone.

Three principal varieties are found in the body and are typed according to the texture of the intercellular substances called the matrix.

1. HYALINE CARTILAGE, or true cartilage
   a) covers the ends of the bones in the joints, forming articular cartilage
   b) makes up the ventral ends of the ribs forming costal cartilage
   c) is a part of the formation of ears, nose, larynx, trachea, bronchi, and bronchial tubes

2. FIBROCARTILAGE, or fibrous cartilage
   a) joins bones together, e.g., flat round disks connecting the bodies of the vertebrae
   b) in the capsules and the ligaments of joints
   c) in the insertions of tendons

3. ELASTIC CARTILAGE
   a) contains a network of elastic fibers, making it very flexible
   b) found in the cartilages of the larynx, auditory tube, epiglottis, and external ear

NOTES:

Chondrosarcoma originates in the cartilage and may occur as a central or peripheral tumor of bone.

As part of the supporting framework of the body, fibrous connective tissue attaches the muscles to bone, cartilage, skin, mucous membrane or fasciae. It includes:

1. Ligaments - tough, flexible bands connecting the articular ends of the bones, and sometimes enveloping them in a capsule. Ligaments help to hold the bones together at the joints.

2. Tendons - cords or bands forming the termination of a muscle and attaching the muscle to a bone

3. Aponeuroses - wide, flat bands of fibrous tissue which connect one muscle with another or with the periosteum of bone

4. Membranes - thin layers of tissue surrounding and protecting organs of the body, separating adjacent cavities, lining a cavity, or connecting adjacent structures

5. Fascia, superficial - subcutaneous areolar connective tissue forming a nearly continuous covering beneath the skin

6. Fascia, deep - sheets of fibrous connective tissue wrapped around muscles, enveloping and binding them down as well as separating them into groups

NOTES:

Synovial sarcoma arises in the synovium, around tendon sheaths, and immediate areas of knee and ankle joints.

1. Each muscle has motor and sensory nerve fibers and is abundantly supplied with arteries, capillaries, veins, and lymphatics.

   Each muscle has an origin, which is the relatively more fixed point of attachment. The end that is freely movable is called the insertion. In many muscles the origin and the insertion are functionally interchangeable.

   There are over 600 muscles in the body, most of them occurring in pairs.

2. SMOOTH MUSCLES, in the walls of the viscera, are called involuntary because they are not under control of the will. They are also referred to as visceral because of their location.

   Smooth muscle is present in the walls of the blood vessels, the gastrointestinal tract, the ureters, the urinary bladder, the ducts of the reproductive system, the uterus, the respiratory passages, the lymphatic vessels, the capsule of the spleen, around the hair follicles of the skin, within the connective tissue of the skin, and within the eyeball.

   CARDIA MUSCLE is present only in the walls of the heart (also called involuntary, or heart).

   SKELETAL MUSCLES, attached to the bones or overlying skin by tendons, are sometimes called voluntary because this type is under control of the will. Due to the microscopic appearance of alternating light and dark areas, they are also referred to as striated muscles.

   Skeletal muscles cover the skeleton and surround the oral, abdominal, and pelvic cavities. They also are attached to the outer layer of the eyeball and form the body of the tongue. The thoracic cavity and abdominal cavity are separated by a thin membrane of skeletal muscle.

The main skeletal muscles are divided into two groups, the APPENDICULAR which connects the upper and lower extremeties to the trunk, and the AXIAL group which connects the vertebral column to the head and neck.

Appendicular group:

1) Muscles that connect the upper extremity to the trunk
   a - dorsal or superficial muscles of the back
   b - ventral or muscles of the pectoral region
   c - muscles of the shoulder
   d - muscles of the arm
   e - muscles of the forearm
   f - muscles of the hand

2) Muscles that connect the lower extremity to the trunk
   a - muscles of the gluteal region (buttock)
   b - muscles of the thigh
   c - muscles of the leg
   d - muscles of the foot

Axial group:

1) Muscles of the head, neck, and trunk
   a - muscles of the scalp, face, and tongue
   b - muscles of the neck
   c - muscles of the abdominal wall, diaphragm, thoracic wall, pelvic floor, perineal muscles and deep muscles of the back

NOTES:

Rhabdomyosarcomas arise in striated muscle, usually in the popliteal, inguinal, gluteal and interscapular regions.

The integumentary system consists of the skin, which covers the body, and its appendages.

The appendages of the skin are the nails, the hairs, the sebaceous glands, the sweat glands and their ducts.

SKIN is composed of two layers, the epidermis (scarf skin, cuticle) and the corium (true skin, derma).

The epidermis consists of four layers:

(1) the deep layer, the stratum germinativum

(2) the three superficial layers: the stratum granulosum

(3) the stratum lucidum

(4) the stratum corneum

There are no blood vessels in the epidermis, but there are fine nerve fibers between the cells of the inner layers.

The corium consists of two layers:

(1) the superficial layer, the stratum papillare which projects upward into the epidermis in the form of papillae

(2) the deep layer, the stratum reticulare (reticular layer)

The true skin is made up of fibroelastic and adipose tissue, blood vessels, lymphatics and sweat glands in its upper portion. In some regions there is smooth muscle.

NOTES:

Carcinoma of the skin accounts for about 19 percent of all cancer in men and approximately 11 percent of all cancer in women. The 2 main types are basal cell and epidermoid. Epidermoid carcinomas do not often metastasize and are usually well differentiated.

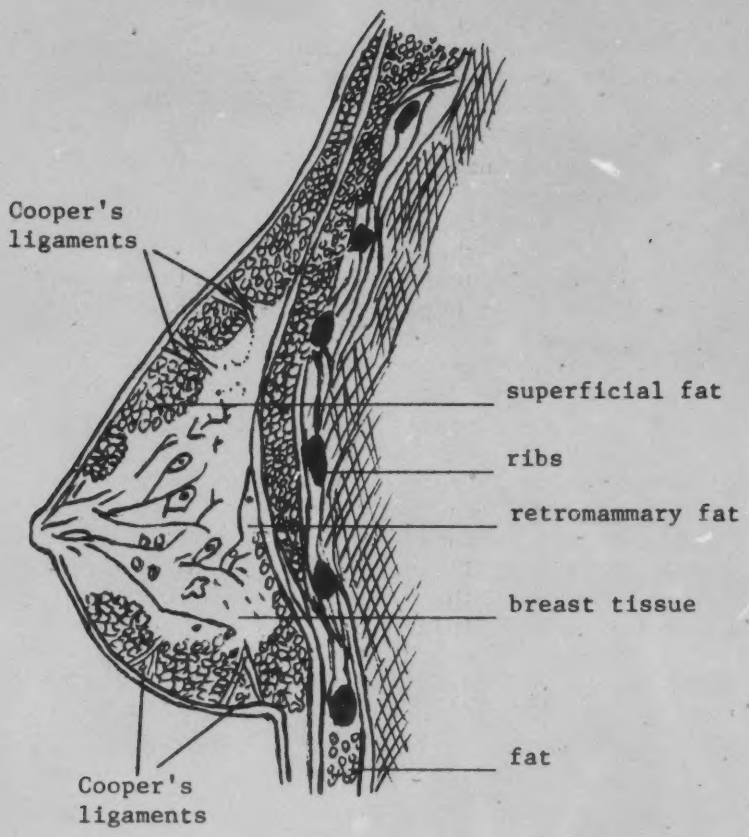
Basal cell carcinomas almost never metastasize, but are deeply invasive. Frequently the basal cell cancer is multifocal in origin.

Carcinomas of sweat glands are infrequent, and sebaceous gland cancers are even more rare.

Malignant melanoma of the skin, usually developing from a nevus, has a marked tendency to metastasize because of the early invasion of dermal lymphatics and blood vessels.

These tumors occur with equal frequency in both men and women between the ages of 40 and 70. They are a rarity in children.

The reproductive organs of the female include the two ovaries, the two uterine tubes, the uterus, the vagina, the external genitalia (vulva), and the two breasts (mammary glands).


Cooper's ligaments
superficial fat
ribs
retromammary fat
breast tissue
fat
Cooper's ligaments

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The two breasts (mammary glands) cover a somewhat circular space in front of the pectoralis muscles, resting on the fascia of each muscle. While there is variation, in general, each breast extends from the second rib above to about the sixth rib below, and from the side of the sternum to the border of the armpit. Covered by skin, breast tissue extends into the axillary area to the lower third or even into the middle third of the axilla where it may lie in contact with the pectoralis minor muscle or the intercostal muscles. This narrow extension of the gland is called the axillary tail.

Superficial fascia of the breast is attached to the skin, and a layer of fat surrounds the gland except in the area of the nipple and areola.

The irregularity of the anterior surface is due to the lobulations formed by the deep attachment of fibrous septa (Cooper's ligaments) which run between the superficial and deep fascia.

About the center of the breast is the nipple, containing the openings of the milk ducts, and is surrounded by a small circular area of pigmented skin called the areola.

The mammary gland is made up of ten to twenty lobes, each possessing its own excretory duct which opens by a separate orifice upon the surface of the nipple. The lobes are subdivided, and the small lobes (lobules) are made up of the terminal tubules of the duct which lie in a mesh of fibrous areolar tissue containing considerable fat.

The lymphatics of the skin of the breast form a dense network under the areola, and this network is continuous with the lymphatics of the skin of the surrounding areas.

NOTES:

Carcinoma of the breast is the most common form of cancer in white women beyond the age of 40, and this has been a fact for the past 30 years.

The most recent average annual age-adjusted incidence rate is 57.7 cases/100,000 population for nonwhite females and 75.0 cases/100,000 population for white females (reference TNCS blue booklet, Table 0006).

NOTES, continued

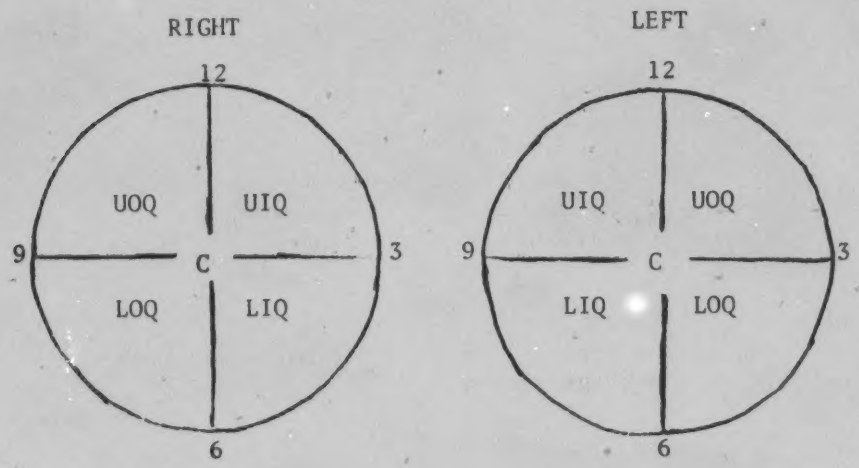
The occurrence of mammary cancer seems to be greater among single, divorced, and widowed women than among married women.

Carcinoma of various types is the most usual pathologic type in malignant breast cancers.

Sarcomas are of two main varieties: cystosarcoma phylloides (which may or may not be malignant) and fibrosarcoma, the latter most frequently arising from the connective tissue.

When carcinoma of the breast occurs in the male, the patient is usually in an older age group.

The following will assist in determining the location of the primary tumor in the breast:




LOCATION AS STATED IN "QUADRANT":

UOQ - upper outer quadrant
UIQ - upper inner quadrant
LOQ - lower outer quadrant
LIQ - lower inner quadrant

C - Central, including subareolar or "beneath nipple"

Upper half, upper midline 9 - 12 - 3 axis
Lower half, lower midline 3 - 6 - 9 axis

Outer (lateral) half, outer midline (left) 12 - 3 - 6 axis
Inner (medial) half, inner midline (left) 3 - 6 - 9 axis

Outer (lateral) half, outer midline (right) 6 - 9 - 12 axis
Inner (medial) half, inner midline (right) 12 - 3 - 6 axis

LOCATION AS STATED IN "O'CLOCK":

The 12:30, 1:00, 1:30, 2:00 or 2:30 axes are in the UIQ of the right breast and in the UOQ of the left breast.

The 3:30, 4:00, 4:30, 5:00 or 5:30 axes are in the LIQ of the right breast and in the LOQ of the left breast.

The 6:30, 7:00, 7:30, 8:00 or 8:30 axes are in the LOQ of the right breast and in the LIQ of the left breast.

The 9:30, 10:00, 10:30, 11:00 or 11:30 axes are in the UOQ of the right breast and in the UIQ of the left breast.

SURGERY

| OPERATIVE TERM | TISSUE EXCISED |
|---|---|
| Excisional Biopsy | tumor with clear margins |
| "Lumpectomy"<br>Limited Mastectomy | tumor with wide excision of surrounding breast tissue |
| Quadrant Mastectomy | one quadrant of the breast |
| Segmental Resection | segment of the breast |
| Partial Mastectomy | portion of the breast |
| Hemimastectomy | one half of the breast |
| Simple Mastectomy<br>Total Mastectomy<br>Complete Mastectomy | amputation of the breast - may or may not include the tail of the breast and may or may not include the fascia |
| Modified Radical Mastectomy | amputation of the breast, entire axillary contents en bloc |
| | Variations: amputation of the breast, partial removal of the axillary contents, partial removal of the pectoralis major, partial removal of the pectoralis minor, complete removal of the pectoralis major or a combination of these less than total ablations |
| | amputation of the breast, entire axillary contents and removal of the pectoralis major en toto |
| Radical Mastectomy | amputation of the breast, complete axillary dissection, all of the pectoralis major and the pectoralis minor en bloc |
| Extended Radical Mastectomy<br>Supraradical Mastectomy | radical mastectomy plus removal of the internal mammary nodes and possibly the thoracic nerve |
| | Also: radical neck dissection or at least removal of the supraclavicular area in continuity with the breast and axilla |

## IRRADIATION

The method used at present is usually Cobalt - "CO 60" - a radioactive isotope.

Irradiation of the axillary lymph nodes or supraclavicular lymph nodes, preoperative or postoperative or when there is no surgery

Irradiation of the breast in those cases which are not operable

Irradiation of any metastatic site

Irradiation of the ovaries to achieve castration

## CHEMOTHERAPY

Many chemotherapeutic agents are effective in treating breast cancer, usually in combination and probably cyclical. Hormones are also employed - androgens, progesterone and estrogens produce clinical remissions.

## ENDOCRINE SURGERY

Bilateral oophorectomy (removal of both ovaries) can induce clinical remission. Bilateral adrenalectomy (removal of both adrenal glands) or hypophysectomy (removal of the pituitary gland) can produce further remission in patients who initially responded to castration but subsequently developed further progress of the disease.

The UTERUS is a hollow, pear-shaped, muscular organ connected with the surrounding structures and walls of the pelvis by means of ligaments. The principal ligaments are the broad ligament and the round ligament.

The fundus is the convex part of the uterus above the entrance of the uterine tubes; the body (corpus uteri) is the part between the fundus and the cervix.

The upper portion of the uterus is free and movable, resting on the upper surface of the urinary bladder, while the lower portion is embedded in the pelvic floor between the bladder and the rectum. The form, size, and position of the uterus vary at different periods of life and under different circumstances.

The cul-de-sac (retrouterine pouch or Pouch of Douglas) is a prolongation of the peritoneum between the anterior surface of the rectum and the posterior surface of the uterus.

The CERVIX (neck) is the lower constricted part of the uterus and extends from the body of the uterus into the vagina. The cavity of the cervix is continuous with the cavity of the body of the uterus.

The wall of the uterus is composed of three main layers:

1. The endometrium consists of two layers. The superficial or functional layer is very thick and is called the basilar layer. The free surface of the mucous membrane is a single layer of columnar epithelial cells, which is continuous with that lining the vagina (except the lower third) and the uterine tubes.

2. The myometrium is composed of layers of smooth muscular tissue intermixed with blood vessels, lymphatics, and nerves, forming the bulk of the uterine walls.

3. The serosa is derived from peritoneum, covering all of the fundus and the entire intestinal surface of the uterus, but covers the anterior surface only as far as the beginning of the cervix. This is the parametrium.

NOTES:

75 percent of all carcinomas of the corpus uteri occur in women over the age of 55 and seem to have greater frequency in infertile women.

The incidence seems to be about the same for white and black women in the United States population.

Adenocarcinoma, arising from endometrial glands, comprises about 10 percent of uterine carcinomas.

Sarcoma of the uterus is relatively rare, but may arise from muscle or connective tissue. Leiomyosarcoma is the most common.

Carcinosarcomas are of very small percentage among the sarcomas. They usually originate in the midline or posterior wall of the fundus and contain both carcinomatous and sarcomatous elements.

Carcinoma of the cervix in most cases is squamous cell type arising from the epithelium of the vaginal portion. Adenocarcinoma of the endocervix is common, and when it occurs, the origin is questionable.

Cancer of the cervix accounts for approximately 5 percent of all cancers among white women and 14 percent of all cancers in black women.

Patients with carcinoma in situ are in a younger age group than are those patients with frank carcinoma.

The ovaries, ovoid in shape and weighing from 2 to 5 gm, are about 4 cm long and 2 cm wide. They are situated, one on each side of the uterus, and connected by the folds of the peritoneum with the posterior surface of the broad ligament of the uterus. They lie below and behind the fallopian tubes in the nulliparous female. During the first pregnancy they become displaced and probably never return to the original positions.

NOTES:

Cystadenocarcinomas have a high incidence of bilaterality and may be diagnosed at an early stage in the disease.

Papillary serous cystadenocarcinomas and the variants comprise at least 75 percent of all ovarian cancers.

Kreukenberg tumors are metastatic from gastrointestinal tract or pelvic tumors. They are usually bilateral, in which the tumor cells are mucus-producing. Eighty percent arise from the stomach by retrograde metastasis along lymphatics and by peritoneal implantation. They may also be metastatic from gallbladder, pancreas, and breast.

The fallopian tubes (also known as uterine tubes or oviducts) are about 7 to 14 cm long and are very narrow at the point of attachment to the uterus. There is an intramural portion of the tube which courses through the wall of the uterus. Each tube passes between the folds of the peritoneum and along the upper margin of the broad ligament toward the side of the pelvis.

The fallopian tube has three coats:

1. the external, or serous, coat which is derived from the peritoneum

2. the middle, or muscular, coat which has two layers ---
   a) the external layer of longitudinally arranged muscular fibers, and
   b) the internal layer of circularly arranged muscular fibers

3. the internal, or mucous, which is covered with ciliated epithelium

NOTES:

Malignancies of the fallopian tube are very rare.

Most of these carcinomas are adenocarcinoma, but a few are squamous cell carcinomas.

Most cases occur in women 40 to 55 years of age.

The VAGINA extends downward and forward from the uterus to the vulva, situated in front of the rectum and behind the urinary bladder. The posterior wall is about 8 or 9 cm long, the anterior wall only 6 to 7 cm long.

The upper portion surrounds the vaginal portion of the cervix which forms a deep recess behind the cervix (the posterior fornix). The anterior and lateral fornices, situated at the front and sides, are smaller.

NOTES:

The incidence of primary carcinoma of the vagina has been estimated as low as one percent to as high as four percent of all cancers of the female reproductive system.

# MALE REPRODUCTIVE SYSTEM

The male reproductive system consists of a pair of male gonads or testes, and a system of excretory ducts with their accessory structures. The ducts are the epididymis, the ductus deferens, and the ejaculatory ducts. The accessory structures are the seminal vesicles, the prostate gland, the bulbo-urethral glands, and the penis.

The prostate gland is situated in the pelvic cavity, below the lower part of the symphysis pubis (articulation between the pelvic bones), above the deep layer of the urogenital diaphragm, and in front of the rectum, through which it may be distinctly felt.

The whole of the prostate and its plexuses is surrounded by the prostatic fascia. The posterior portion, the fascia, FASCIA OF DENONVILLIERS, forms a barrier between the prostate and the rectum.

The prostate, consisting of five lobes, is perforated by the urethra and the two ejaculatory ducts and surrounds the neck of the urinary bladder. The five lobes are:

| | |
|---|---|
| POSTERIOR | - posterior to plane passing through the two ejaculatory ducts |
| ANTERIOR | - tissue forming roof of the urethra |
| LATERAL (2) | - prostatic tissue between posterior and anterior lobes |
| MEDIAN | - narrow strip of tissue forming the floor of the urethra |

The prostate is surrounded by a thin but strong layer of connective tissue and smooth muscle. This capsule is firmly adherent to the prostate and is continuous with the stroma of the gland. The glandular substance consists of tubules which join to form the 20-30 small excretory ducts which open into the prostatic urethra.

NOTES:

The highest incidence of prostatic cancer is found in the United States, occurring mostly in the older age groups.

A relationship between benign prostatic hypertrophy and cancer has not been established. Currently, a search for a hormonal cause is being conducted by various scientists.

Carcinoma most frequently originates in the posterior lobe and over 95 percent are located in the subcapsular areas.

The two testes, suspended outside the abdominal cavity in a sac called the scrotum, lie between the thighs.

Each testis is enveloped with three coats:

(1) the tunica vaginalis is derived embryonically from the peritoneum. Upon descent of the testis, it nearly surrounds the organ except at the point where the epididymis is attached.

(2) The tunica albuginea is a dense fibrous tissue which interlaces in every direction.

(3) The tunica vasculosa is the vascular layer consisting of a plexus of blood vessels held together by delicate areolar tissue.

NOTES:

Testicular tumors comprise fewer than one percent of all malignant tumors, commonly found in men 20 to 34 years of age.

Almost all lesions of the testis are malignant and account for about 0.6 percent of cancer in males.

Seminoma, teratocarcinoma, teratosarcoma, and embryonal carcinomas are more malignant, rapidly growing, and invasive.

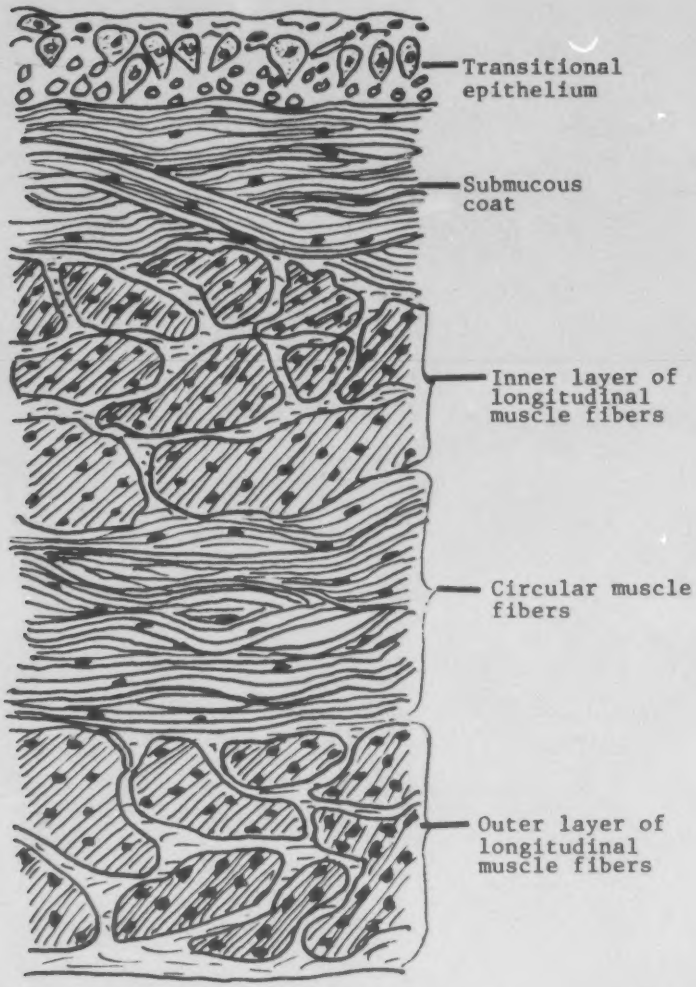
Adult teratoma and chorionepithelioma are usually small and soft with areas of hemorrhage and necrosis. Rare extragenital chorionepithelioma may appear in the male and are similar to the chorionepithelioma of the placenta.

In children, the most common testicular cancer is the embryonal carcinoma.

Lymphosarcoma occurs mostly in elderly men and is more likely to be bilateral than another type of testicular cancer.

The Urinary System consists of two kidneys, two ureters, one urinary bladder, and one urethra. The function of the system is the elaboration and excretion of urine.

Vertical Section of Bladder Wall

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The bladder, a hollow organ situated in the pelvic cavity, is in front of the rectum in the male and in front of the anterior wall of the vagina and neck of the uterus in the female.

The bladder has four coats:

1. the serous coat, a reflection of the peritoneum, covers only the superior surface and the upper part of the lateral surfaces.

2. The muscular coat has three layers:
   inner longitudinal
   middle circular (lamina propria)
   outer longitudinal layer

3. The submucous coat is areolar connective tissue and is interlaced with the muscular coat.

4. The mucous membrane, which is transitional epithelium, lines the bladder as well as the ureters and the urethra.

The TRIGONE, a smooth area of the mucous membrane lining, is firmly bound to the muscular coat. This small triangular area is formed by the internal orifice of the urethra and the postero-lateral orifices of the ureters.

NOTES:

Papillary carcinomas, the most common form of cancer in the urinary bladder, are more frequently single, firmer, have a broader base than benign tumors and form large, bulky, cauliflower-like growths.

Transitional cell carcinomas, of the sessile infiltrating type, spread widely through the bladder wall and surrounding structures, with lesser tumor formation in the bladder lumen.

The qualifying adjectives most frequently used in describing surgery for bladder malignancies refer to the approach to the surgical area rather than the extent of surgical ablation. Some of these are; retropubic, suprapubic, perineal, abdominal, abdominoperineal, periabdominal, vaginal. This is because the choice of technique depends upon the sex of the patient, the size and location of the tumor within the bladder.

The intent of the practitioner is to preserve a useful bladder of normal capacity and, therefore, the surgical extent at first treatment is conservative in the early cases. The degree of spread, the histological type of the tumor as well as the primary site area are major considerations in determining therapy.

Pre-operative radiation has been widely used, and sometimes is curative in itself. Radiotherapy is also very useful in the palliative regimen and offers relief from pain.

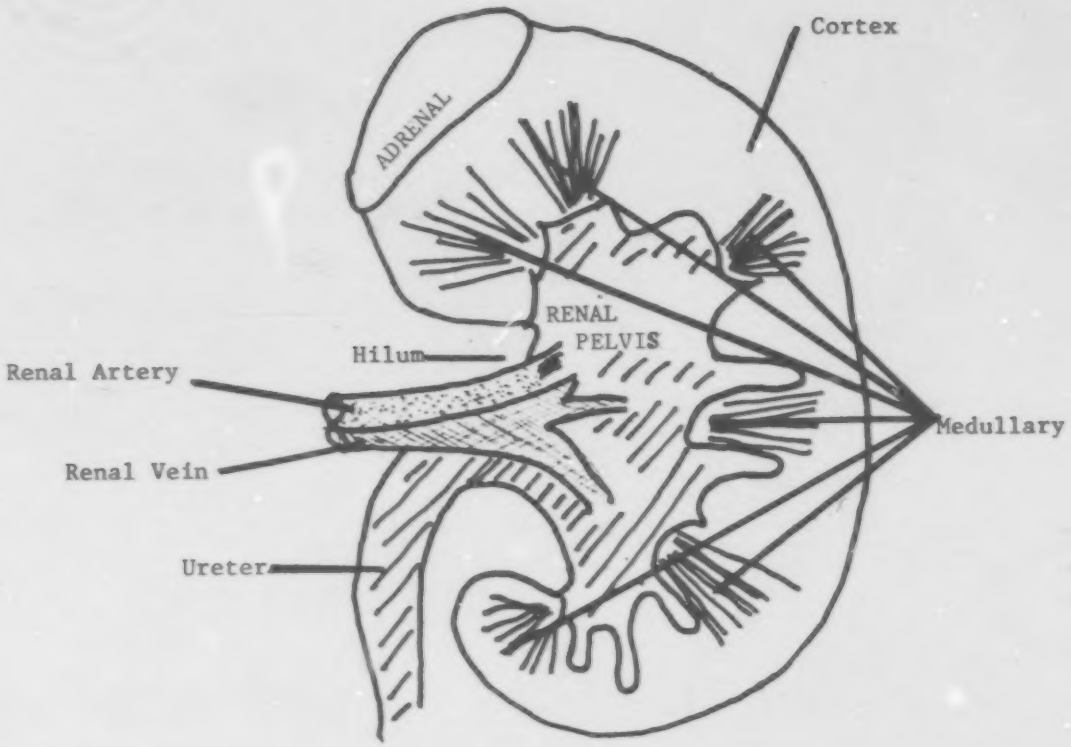
Interstitial irradiation, radon seed implantation, and external radiation therapy are used with surgery or sometimes both radiation modalities are employed in combination or singly.

Chemotherapeutic agents have, to date, not been too successful as adjuvants to surgical or radiotherapeutic treatment.

SURGERY

| OPERATIVE TERM | DEFINITION |
|---|---|
| Electrocoagulation | Destruction of tumor tissue by passage of high-frequency currents (electrodes) |
| Fulgeration | Destruction of tumor by means of electric sparks |
| TUR (Transurethral Resection) | Removal of tumor tissue via urethra with use of cystoscope |
| Segmental Resection | Removal of a large portion of the bladder wall and overlying peritoneum |
| Partial Cystectomy | Removal of a large cuff of urinary bladder |
| Radical Retropubic Prostatectomy (in combination with above) | Resection of prostate with one or both ureters reimplanted |
| Complete Cystectomy Total Cystectomy | Resection of the entire bladder, seminal vesicles, prostate in the male; entire bladder and urethra in the female |
| Simple Total Cystectomy | in addition to above, as much connective tissue as possible and the uterus and vagina in the female |
| Radical Cystectomy | as above, with pelvic node dissection |
| Pelvic Exenteration | Complete excision of all pelvic viscera, sigmoid colostomy, bilateral ureteral implantation into the colon above the colostomy |

Kidney and Renal Pelvis in Relation to Adrenal Gland



The right and left kidneys are situated on each side of the vertebral column, just behind the peritoneum of the abdominal wall. A bit below the diaphragm, but touching, they move with the diaphragm upon inspiration. The right kidney is pressed down by the liver and is somewhat lower than the left. The adult kidney measures about 4.5 inches long, 2-3 inches wide and not much over an inch in thickness.

The kidney and its vessels are imbedded in a mass of fatty tissue called the adipose capsules or PERIRENAL FAT, which helps to support the organ. Tough fibers form a capsule around the kidney and sheets of connective tissue help to keep the kidney in place. In each kidney surface there is a concave indentation called the HILUM (hilus, fissure) through which enter the renal artery, renal vein, lymph vessels, and nerves and from which the ureter emerges.

The CORTEX is a tough, connective tissue sheath just beneath the outer layer of the kidney. The cortex emerges with the MEDULLA, which consists of a varying number of cone-shaped divisions called the RENAL PYRAMIDS. The top of each pyramid extends into the RENAL PELVIS, the expansion of the proximal end of the ureter which becomes a sac within the center of the kidney.

The URETER has three layers of muscle, is directly continuous with the renal pelvis, runs downward into the pelvic cavity, and finally opens into the fundus of the bladder at the trigone.

NOTES:

Most adenocarcinomas of the kidney (80% of all malignant renal tumors) occur after the age of 40 years and are twice as prevalent in the male.

Embryonal adenosarcoma (Wilm's tumor) is a rare, mixed tumor occurring in children under seven and comprises approximately 20 percent of all childhood malignancies.

Renal pelvis lesions (about 10% of all renal tumors) are of the same type of tumor found in the bladder and ureter. The most common forms are papillomas and papillary carcinoma. Squamous cell carcinoma is uncommon.

Primary cancers of the ureter are very rare.

NOTES, continued:

10 percent of all "renal tumors" arise in the renal pelvis.

A major calyx is a primary subdivision of the renal pelvis. A minor calyx is a division of a major calyx. Therefore, when the pathology sheet states there is involvement of either of these areas, the renal pelvis is involved.

Unlike other organ systems, the endocrine glands do not form an anatomic system in which they are in continuity. They are situated in widely separated areas of the body and form a system in function, only. They have the common characteristic of not having ducts and of discharging their specific secretions called hormones into the blood stream.

The thyroid gland lies in the anterior middle portion of the neck at the sides of and in front of the trachea, below the thyroid cartilage and anterolateral to the larynx. It consists of two lateral lobes about 5 cm long, 3 cm wide, and the thickness is about 2 cm. Strands of thyroid tissue called the ISTHMUS connect the two lobes at the lower thirds. Its situation and size are variable, and sometimes the isthmus is absent.

A third lobe, cone-shaped and called the PYRAMIDAL LOBE, frequently arises from the upper part of the isthmus (or from the adjacent portion of either lobe) and ascends as far as the hyoid bone. Occasionally, small detached portions of thyroid tissue are found in the neck, sometimes distant from the thyroid, and they are called accessory thyroid glands.

The thyroid is enveloped by two layers. The external layer (the outer capsule) is continuous with deep cervical fascia and extends inward, dividing the gland into closed vesicles of irregular size to form the inner layer (the inner capsule) These vesicles contain a colloid substance which is the source of the thyroid hormone.

NOTES:

Thyroid cancer is found predominantly in women, approximately 65 percent of all thyroid cancers.

It has been estimated that almost 50 percent of nodules in children are malignant; approximately 50 percent are younger than 30 years. In the younger age groups, irradiation in infancy seemed to have an etiologic role in the development of papillary and follicular carcinomas.

Thyroid carcinoma is most commonly classified according to microscopic growth pattern. The types encountered and the relative frequency are:

| | |
|---|---|
| adenoma with blood vessel invasion | 32% |
| papillary adenocarcinoma | 32% |
| alveolar adenocarcinoma | 10% |
| small cell carcinoma | 15% |
| giant cell carcinoma | 8% |
| Hurtle cell carcinoma | 3% |

The suprarenal glands (also known as adrenal glands or bodies) are located above the upper end of each kidney, resting on the upper pole and medial border of the kidney.

The right adrenal gland is somewhat triangular in shape, the left one, more semilunar. The length and width vary from 3 to 5 cm, and the average weight of each is 5 to 9 gm.

Each gland is enveloped by a thin capsule consisting of the CORTEX (the outer portion) and the MEDULLA (the inner portion).

NOTES:

Tumors of the suprarenal gland are rare.

The suprarenal gland is a very common site for metastases, but in spite of this frequent occurrence, there is rarely a question of differential diagnosis between these metastatic tumors and primary tumors of the suprarenal gland.

Adenocarcinomas have been observed in children one to 5 years of age, most frequently in females, and are found equally in both sexes in adults 30 to 40 years of age.

Neuroblastomas are the most common malignant suprarenal tumors, and about 80 percent occur within the first 5 years of life. Pheochromocytomas have been observed in patients in every decade of life.

The PARATHYROID glands are usually four in number and are arranged in pairs. They do not have the same function or origin as the thyroid, even though they are usually located on the posterior border of the thyroid gland. They are about 6 to 7 mm long and 2-3 mm thick, lying beneath the outer capsule of the thyroid gland. They sometimes have a delicate connective tissue capsule of their own.

NOTES:

Malignant tumors of the parathyroid gland are extremely rare.

The HYPOPHYSEAL GLAND (the pituitary body) is a mass of tissue about one cm in diameter and is attached to the base of the brain by a short stalk called the infundibulum. Nerve fibers from the hypothalamus pass through the infundibulum, terminating in the pars nervosa.

The pituitary body consists of two lobes:

1. the anterior lobe which is of glandular structure;

2. the posterior lobe, containing the infundibular stem, consists of two parts - the pars nervosa, or neural lobe, and the pars intermedia, composed of epithelial cells.

The THORACIC CAVITY lies between the base of the neck and the diaphragm. It is surrounded by the thoracic wall which consists of part of the vertebral column, the ribs, costal cartilages, intercostal muscles, and the sternum.

The thoracic wall encloses the trachea, bronchi, lungs, heart, esophagus, and thymus gland.

The ABDOMINAL CAVITY lies below the diaphragm and contains the stomach, the small intestine, most of the large intestine, the liver, the gallbladder, the pancreas, the spleen, the kidneys, the adrenal glands, and the ureters.

The PELVIC CAVITY, the lowermost portion of the abdominal cavity, lies below an imaginary line drawn across the prominent crests of the hipbone. It is more completely bounded by bony walls than the rest of the abdominal cavity.

The greater pelvis (false pelvis) is divided from the lesser pelvis (true pelvis) by a narrow bony ring which is called the pelvic inlet.

In the female, the pelvic cavity contains the urinary bladder, urethra, the rectum, the uterus, fallopian tubes, and ovaries.

In the male, the pelvic cavity contains the urinary bladder, urethra, rectum, prostate, and seminal vesicles.

The mediastinum, or interpleural space, acts as a "partition wall" between the pleural sacs of the two lungs. Extending from the sternum to the spinal column, it contains all the thoracic viscera except the lungs and pleura.

The mediastinum, for the purpose of description, is divided into two parts: upper and lower. The upper part is called the superior mediastinum. The lower part is divided into the anterior mediastinum, the middle mediastinum, and the posterior mediastinum.

The SUPERIOR MEDIASTINUM, above the pericardium, contains the origins of the sternohyoid and sternothyroid muscles, part of the longus colli muscles, the transverse portion of the aortic arch, the innominate, left carotid and subclavian arteries, the superior intercostal vein, the vagus, cardiac, phrenic, and left recurrent laryngeal nerves, the trachea, esophagus, thoracic duct, the remains of the thymus, and lymphatics.

The ANTERIOR MEDIASTINUM, in front of the pericardium, contains the internal mammary vessels of the left side, loose areolar tissue, lymphatic vessels and a few lymph nodes.

The MIDDLE MEDIASTINUM contains the heart and its enclosure, the pericardium, the ascending aorta, the superior vena cava, the bifurcation of the trachea, the pulmonary arteries and veins, and the phrenic nerves.

The POSTERIOR MEDIASTINUM, behind the pericardium, contains the thoracic part of the aorta, the greater and lesser azygos veins, the vagus and splanchnic nerves, the esophagus, the thoracic duct, and many large lymph nodes.

The peritoneum, the most extensive serous membrane of the body, forms a lining for the major parts of the walls of the abdominopelvic cavity (the parietal layer) and also covers most of the abdominal viscera (the visceral layer). The parietal and visceral layers form a continuous sheet and enclose the peritoneal cavity which is only a potential space since the layers are in contact. A small amount of serous fluid between the parietal and the visceral layers of peritoneum prevents friction as the organs glide over each other. When the peritoneum extends to leave the abdominal wall to cover an organ, it is called the line of peritoneal reflection and this double layer of peritoneum forms a mesentery. The layers reflected onto solid viscera constitute ligaments**; and in these mesenteries and ligaments, blood vessels, nerves and lymphatics reach the viscera. The double layer of peritoneum which connects an organ to an adjacent organ is called an omentum.

The GREATER OMENTUM, like an apron, is attached to the greater curvature of the stomach above and, after dipping down over the intestine, returns to fuse with the transverse colon. The LESSER OMENTUM passes from the lesser curvature of the stomach to the liver, leaving a triangular area on the superior surface of the liver devoid of peritoneum. This is called the bare area of the liver.

In the male, the peritoneal cavity is a closed sac. In the Female the peritoneum is reflected from the bladder onto the anterior surface of the uterus and covers all of the posterior uterine surface except the vaginal portion of the cervix.

** The gastrocolic ligament connects the stomach to the spleen.

The coronary ligament is a reflection of the peritoneum between the liver and the diaphragm, the right and left margins being called the right triangular ligament and the left triangular ligament, respectively.

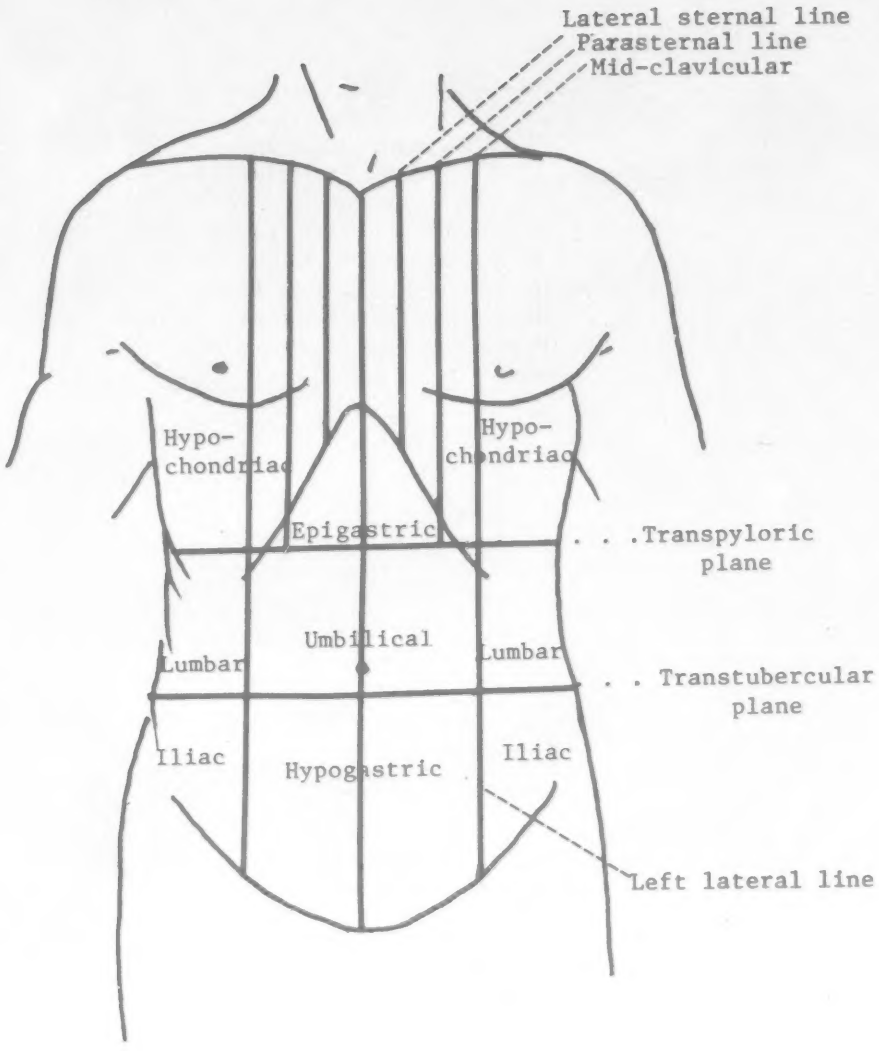
The broad ligament of the uterus is a fold of peritoneum which extends laterally from the uterus to the pelvic wall and encases the uterine blood vessels.

Situated in the lumbar and iliac regions, the retroperitoneal space is the space between the posterior parietal peritoneum and the posterior abdominal wall. In the lumbar fossa, fascia covers the deep muscles and is overlaid with varying amounts of fatty tissue, filling the interstices between the muscles. This provides a flexible cushion for the pancreas in the middle, the kidney, ascending colon and a portion of the duodenum on the right side and the kidney and descending colon on the left.

Passing through the retroperitoneal tissue are the ureter, renal vessels, spermatic vessels in the male, and ovarian vessels in the female. This tissue abuts against the inferior vena cava on the right, and the aorta on the left.

Lying beneath peritoneum, the retroperitoneal tissue in the iliac fossa is directly continuous with the anterior and lateral aspects of the abdominal wall, the lumbar region above, and the pelvis below. The tissue contains the iliac vessels, ureter, genito-femoral nerve, spermatic or ovarian vessels, and the iliac lymph nodes.

REGIONS OF THE ABDOMEN




from Gray's Anatomy

MAJOR PLANES OF THE BODY:

| | |
|---|---|
| MEDIAN | - imaginary plane longitudinally dividing the body into right and left half from skull to feet. |
| SAGITTAL | - planes parallel to the median plane |
| CORONAL | - any plane parallel with the long axis of the body and perpendicular to the median plane |
| TRANSVERSE (Horizontal) | - plane at right angles to the long axis of the body (median) |

TERMS COMMONLY USED:

| | |
|---|---|
| ANTERIOR | - toward the front of the body |
| POSTERIOR | - toward the back of the body |
| LATERAL | - structures away from the median plane |
| MEDIAL | - structures nearer to the median plane |
| CAUDAL | - downward - away from the head |
| CEPHALAD | - upward - toward the head |
| SUPERFICIAL | - confined, or pertaining to the surface |
| DEEP | - not superficial |
| PROXIMAL | - nearest, next to |
| DISTAL | - farthest from any point of reference |
| EXTERNAL | - situated or occurring on the outside |
| INTERNAL | - body wall, cavities, hollow viscera |
| PARIETAL | - pertaining to the walls of a cavity |
| VISCERAL | - pertaining to an organ |

I R

## HEIGHT CONVERSION

(2.5 centimeters = 1 inch)

| | |
|---|---|
| 4' - 48" - 120 cm | 4' 6" - 54" - 135 cm |
| 4' 1" - 49" - 122.5 cm | 4' 7" - 55" - 137.5 cm |
| 4' 2" - 50" - 125 cm | 4' 8" - 56" - 140 cm |
| 4' 3" - 51" - 127.5 cm | 4' 9" - 57" - 142.5 cm |
| 4' 4" - 52" - 130 cm | 4'10" - 58" - 145 cm |
| 4' 5" - 53" - 132.5 cm | 4'11" - 59" - 147.5 cm |
| 5' - 60" - 150 cm | 5' 6" - 66" - 165 cm |
| 5' 1" - 61" - 152.5 cm | 5' 7" - 67" - 167.5 cm |
| 5' 2" - 62" - 155 cm | 5' 8" - 68" - 170 cm |
| 5' 3" - 63" - 157.5 cm | 5' 9" - 69" - 172.5 cm |
| 5' 4" - 64" - 160 cm | 5'10" - 70" - 175 cm |
| 5' 5" - 65" - 162.5 cm | 5'11" - 71" - 177.5 cm |
| 6' - 72" - 180 cm | 6' 6" - 78" - 195 cm |
| 6' 1" - 73" - 182.5 cm | 6' 7" - 79" - 197.5 cm |
| 6' 2" - 74" - 185 cm | 6' 8" - 80" - 200 cm |
| 6' 3" - 75" - 187.5 cm | 6' 9" - 81" - 202.5 cm |
| 6' 4" - 76" - 190 cm | 6'10" - 82" - 205 cm |
| 6' 5" - 77" - 192.5 cm | 6'11" - 83" - 207.5 cm |

## WEIGHT CONVERSION

(2.2 kilograms = 1 pound)

| | | | |
|---|---|---|---|
| 100#-45.5 kg | 110#-50 kg | 120#-54.5 kg | 130#-59.1 kg |
| 101#-45.9 kg | 111#-50.5 kg | 121#-55 kg | 131#-59.5 kg |
| 102#-46.4 kg | 112#-50.9 kg | 122#-55.5 kg | 132#-60 kg |
| 103#-46.8 kg | 113#-51.4 kg | 123#-55.9 kg | 133#-60.5 kg |
| 104#-47.3 kg | 114#-51.8 kg | 124#-56.4 kg | 134#-60.9 kg |
| 105#-47.7 kg | 115#-52.3 kg | 125#-56.8 kg | 135#-61.4 kg |
| 106#-48.2 kg | 116#-52.7 kg | 126#-57.3 kg | 136#-61.8 kg |
| 107#-48.6 kg | 117#-53.2 kg | 127#-57.7 kg | 137#-62.3 kg |
| 108#-49.1 kg | 118#-53.6 kg | 128#-58.2 kg | 138#-62.7 kg |
| 109#-49.5 kg | 119#-54.1 kg | 129#-58.6 kg | 139#-63.2 kg |

| | | | |
|---|---|---|---|
| 140#-63.6 kg | 150#-68.2 kg | 160#-72.7 kg | 170#-77.3 kg |
| 141#-64.1 kg | 151#-68.2 kg | 161#-73.2 kg | 171#-77.7 kg |
| 142#-64.5 kg | 152#-69.1 kg | 162#-73.6 kg | 172#-78.2 kg |
| 143#-65 kg | 153#-69.5 kg | 163#-74.1 kg | 173#-78.6 kg |
| 144#-65.6 kg | 154#-70 kg | 164#-74.5 kg | 174#-79.1 kg |
| 145#-65.9 kg | 155#-70.5 kg | 165#-75 kg | 175#-79.5 kg |
| 146#-66.4 kg | 156#-70.9 kg | 166#-75.5 kg | 176#-80 kg |
| 147#-66.8 kg | 157#-71.4 kg | 167#-75.9 kg | 177#-80.5 kg |
| 148#-67.3 kg | 158#-71.8 kg | 168#-76.3 kg | 178#-80.9 kg |
| 149#-67.7 kg | 159#-72.3 kg | 169#-76.8 kg | 179#-81.4 kg |

| | |
|---|---|
| 180#-81.8 kg | 190#-86.4 kg |
| 181#-82.3 kg | 191#-86.8 kg |
| 182#-82.7 kg | 192#-87.3 kg |
| 183#-83.2 kg | 193#-87.7 kg |
| 184#-83.6 kg | 194#-88.2 kg |
| 185#-84.1 kg | 195#-88.6 kg |
| 186#-84.5 kg | 196#-89.1 kg |
| 187#-85 kg | 197#-89.5 kg |
| 188#-85.5 kg | 198#-90 kg |
| 189#-85.9 kg | 199#-90.5 kg |

## SIZES IN CENTIMETERS, MILLIMETERS, INCHES

10 mm - 1 cm

2.5 cm - 1 inch

1 mm - 1/10 cm

1 cm - .394 inch

## DESCRIPTIONS OF TUMOR SIZES INTERPRETED IN CM'S

### Fruits

| | |
|---|---|
| Apple | 7 |
| Apricot | 4 |
| Cherry | 2 |
| Date | 4 |
| Fig, dried | 4 |
| Grape | 2 |
| Grapefruit | 10 |
| Kumquat | 5 |
| Lemon | 8 |
| Lime | 6 |
| Olive | 2 |
| Orange | 9 |
| Peach | 6 |
| Pear | 9 |
| Plum | 3 |
| Tangerine | 6 |

### Nuts

| | |
|---|---|
| Almond | 3 |
| Chestnut | 4 |
| Chestnut, horse | 4 |
| Hazel | 2 |
| Hickory | 3 |
| Peanut | 1 |
| Pecan | 3 |
| Walnut | 3 |

| | |
|---|---|
| Bean | 1 |
| Bean, lima | 2 |
| Pea | <1 |
| Pea, split | <1 |

### Miscellaneous Food

| | |
|---|---|
| Doughnut | 9 |
| Egg | 5 |
| " , bantam | 4 |
| " , goose | 7 |
| " , hen | 5 |
| " , pigeon | 3 |
| " , robin | 2 |
| Lentil | 0.5 |
| Millet | <1 |

### Money

| | |
|---|---|
| Dime | 1 |
| Dollar, silver | 4 |
| Dollar, half | 3 |
| Nickel | 2 |
| Quarter | 2 |
| Penny | 2 |

### Other

| | |
|---|---|
| Ball, golf | 4 |
| Ball, ping pong | 3 |
| Baseball | 7 |
| Eraser on pencil | <1 |
| Fist | 9 |
| Marble | 1 |
| Match head | <1 |
| Microscopic | <1 |

Although from a histologic standpoint there are hundreds of different cancers, there are five major categories: carcinoma, sarcoma, myeloma, leukemia, and lymphoma. There are also some cancers of mixed types.

CARCINOMA: Malignancy of epithelial origin - i.e., cancer of the internal or external lining of the body. Examples of epithelial tissues are squamous epithelium (squamous or epidermoid carcinoma of skin, lip, tongue, cervix), glandular epithelium (adenocarcinoma of all types), and transitional epithelium (transitional cell carcinoma of bladder and a few other sites).

SARCOMA: Malignancy of connective tissue origin. Examples of connective tissue are bone (osteosarcoma or osteogenic sarcoma); cartilage (chondrosarcoma or malignant chondroblastoma); smooth muscle leiomyosarcoma); skeletal muscle (rhabdomyosarcoma); membranous lining of body cavities (mesothelioma or mesothelial sarcoma); fibrous tissue (fibrosarcoma); blood vessels (angiosarcoma or hemangioendothelioma); adipose tissue (liposarcoma); neurogenic connective tissue (glioma or astrocytoma); primitive or embryonic connective tissue (myxosarcoma); and mixed connective tissue types (mesenchymous or mixed mesodermal tumor).

MYELOMA: Malignancy of plasma cell series (cells which produce some of the proteins found in the blood). These cells are generally found in the bone marrow.

LYMPHOMA: Malignancy of cells of the lymph nodes or of similar cells which may occur elsewhere. (lymphangiosarcomas, the rare cancers of lymphatic vessels, are not lymphomas, but sarcomas).

LEUKEMIA: Malignancy of the blood-forming elements of the bone marrow. These include: myelogenous or granulocytic leukemia (malignancy of the granulocytic white blood cell series); lymphatic, lymphocytic, or lymphoblastic leukemia (malignancy

LEUKEMIA (continued):

of the lymphocytic blood cell series); and polycythemia vera or erythremia (malignancy of all the blood cell series, but with red cells predominating).

MIXED TYPES: Cancers composed of different tissue types. The type components may be within one category or from different categories. Some examples are: adenosquamous carcinoma; mixed mesodermal tumor, carcinosarcoma, teratoma.

Basic terms used in microscopic description of a pathologic specimen:

| | |
|---|---|
| Anaplasia | A condition in tumor cells in which there is loss of normal differentiation, organization, and specific function |
| Monophasic anaplasia | Reversion of a cell form to embryonic type as in cancer formation |
| Polyphasic anaplasia | Change of a cell into a cell of more complex character |
| Desmoplasia | The formation and development of fibrous tissue. In tumors, excessive fibrous tissue formation in stroma |
| Differentiation | An increase in complexity and organization of cells and tissues |
| Dysplasia | Abnormal tissue development |
| Grade | Histological estimate of the degree of malignancy of a tumor |
| Heteroplasia | The formation of tissue abnormal in type or in location |
| Metaplasia | The change in the type of adult cells in a tissue to a form which is not normal for that tissue |
| Mitosis, asymmetrical | Irregular, atypical, and multipolar cells - indicative of malignancy |
| Necrosis | The pathologic death of a cell or group of cells in contact with living cells |
| Pleomorphic | Occurring in various morphological forms |

## Histologic Classifications

| Grade | Description |
|---|---|
| I | Well differentiated |
| II | Moderately well differentiated |
| III | Poorly differentiated |
| IV | Undifferentiated (also "Anaplastic") |

The "Marshall Classification" and the "Jewett Classification" describe both the grade of the lesion and the extent of disease for URINARY BLADDER tumors. A tumor is graded as papilloma or as one of the four grades of carcinoma, and extent of tumor involvement is defined by one of seven stages.

- O confined to the mucosa
- A invasion of the submucosa
- B1 superficial muscle invasion
- B2 deep muscle invasion
- C invasion of perivesical fat
- D1 regional lymph node invasion and/or adjacent organs
- D2 distant metastases

According to "Dukes' Classification" of extent of disease for tumors of the LARGE INTESTINE AND RECTUM, there are three stages of involvement:

- A Wall involvement, but no spread beyond the serosa, no vein invasion
- B Wall involvement, with spread beyond the serosa, but no regional lymph node involvement and no vein invasion
- C Spread through the wall, involvement of the serosa, metastases to regional lymph nodes, vessel invasion

Cytology is the scientific study of cells, their origin, structure, and function. Exfoliative cytology is a method of diagnosis of cancer based on microscopic examination of cells (as contrasted with tissue diagnosis by histology).

Included are smears from sputum, bronchial washings, breast excretions, prostatic secretions, gastric fluid, spinal fluid, peritoneal fluid, urinary sediment, cervical and vaginal smears. Also included are diagnoses based upon paraffin block specimens from concentrated spinal, pleural, or peritoneal fluid.

The method most often used in reporting cytologic findings in cancer detection studies is that originally prepared by Dr. Papanicolaou and consists of "grading" the slides into five more or less distinct groups.

I Cells consistent with normal findings

II Slightly atypical cells, but with no evidence of malignant change

III Suspicious atypical cells but no clear evidence of malignancy

IV Atypical cells are present which are suggestive but not absolutely positive for malignancy

V Atypical cells consistent with malignancy

SMA - 12

| | |
|---|---|
| Total Protein | 6.0-8.0 g/dl |
| Albumin | 3.5-5.0 g/dl |
| Calcium | 8.5-10.5 mg/dl |
| Inorganic Phosphorus (Inor.Phos.) | 2.5-4.5 mg/dl |
| Cholesterol (Chol.) | Quartiles or 150-250 mg/dl |
| Glucose | 65-110 mg/dl |
| Blood Urea Nitrogen (BUN) | 10-20 mg/dl |
| Uric Acid | 2.5-8.0 mg/dl |
| Alkaline Phosphatase (Alk.Phos.) | 30-85 mU/ml |
| Lactic Dehydrogenase (LDH) | 100-225 mU/ml |
| Total Bilirubin | 0.26-1.0 mg/dl |
| Serum Glutamic Oxaloactic Transaminase (SGOT) | 7.5-40 mU/ml |

SMA - 6

| | |
|---|---|
| Sodium | 135-145 MEQ/l |
| Potassium | 3.5-5.0 MEQ/l |
| Chloride | 95-105 MEQ/l |
| Carbon Dioxide ($CO_2$) | 24-32 MEQ/l |
| Blood Urea Nitrogen (BUN) | 10-20 mg/dl |
| Creatinine | 0.7-1.4 mg/dl |

A "SCAN" is a printed image.

"Scan" is an abbreviation for scintiscan, which is a two-dimensional picture representing rays emitted by a radioactive isotope concentrated in a specific tissue of the body, such as brain, thyroid, liver.

ULTRASONIC SCAN is a method of detecting abnormal tissue by use of high frequency sound waves.

THERMOGRAM is a graphic record of surface temperatures of the body, based on the self-eminating infrared radiation, and is sometimes a means of detecting or diagnosing underlying pathologic processes.

Roentgen rays are a most important factor in medical diagnostic determinations. The high degree of penetration into tissue makes it possible to obtain a visualization of the internal structures of the body.

X-RAY DIAGNOSTIC FILMS are the findings of any type of roentgenography. Examples are:

| | |
|---|---|
| Chest films | - condition of the contents of the thoracic cavity |
| Bone series | - evidence of bone destruction or abnormality |
| Mammogram, Xerogram | - soft tissue roentgenogram of the breast |
| Tomogram, Laminagram, Vertigram, Planigram | - All are radiographic photographs of a body section that shows detail at a predetermined depth. |

Special techniques for roentgenography of different areas of the body and the filmed results have descriptive terms. All the examples listed below are x-ray films photographed after an organ or system has been rendered opaque by some contrast medium.

| | |
|---|---|
| Angiogram | - blood vessels |
| Bronchogram | - long and bronchus |
| Upper GI Series, Barium Enema | - gastrointestinal |
| Pyelogram | - renal pelvis and ureter |
| Urogram | - urinary tract |

The manipulation of the following endoscopic instruments provide visual examination of the interior of an organ through its natural outlet or through an incision to view the interior of a body cavity*. It is through these hollow, lighted instruments that pathologic specimens (biopsies) and cytologic specimens (washings, brushings, etc.) are taken.

| INSTRUMENT | ORGAN/CAVITY |
|---|---|
| Bronchoscope | Tracheobronchial tree |
| Colposcope | Vagina and Cervix |
| *Culdoscope | Retrovaginal pouch and pelvic viscera through posterior vaginal wall |
| Cystoscope | Urinary tract |
| Esophagoscope | Esophagus |
| Gastroscope | Stomach |
| Laryngoscope | Larynx |
| *Mediastinoscope | Mediastinum through suprasternal incision |
| Otoscope (auriscope) | Inner ear |
| *Peritoneoscope | Peritoneum through abdominal wall |
| Proctoscope | Rectum and anus |
| Sigmoidoscope | Sigmoid colon |

TYPES OF DIAGNOSES

DIAGNOSIS is defined by Blakiston's New Gould Medical Dictionary as "The art or the act of determining the nature of a disease." Below are definitions of types of diagnoses.

Anatomic diagnosis:
(a) A diagnosis based upon the recognition of definite anatomic alterations lying back of the phenomena.
(b) A post mortem diagnosis.

Clinical diagnosis:
One based upon the history and physical examination of the patient: used frequently in reference to diseases for which no diagnostic or laboratory tests are available.

Deductive diagnosis:
A diagnosis made by a physician after a consideration of all the manifestations of the disease, and after forming a conception of the disorder in terms of physiology, hence of the anatomic localization of the lesion, and finally by inference of the pathologic process and its etiology.

Diagnosis by exclusion:
The recognition of a disease by excluding all other known conditions.

Differential diagnosis:
The distinguishing between two diseases of similar character by comparing their symptoms.

Laboratory diagnosis:
One arrived at from the results of tests on an examination of various tissues and excretions.

Microscopical diagnosis:
That made by means of microscopical examination of tissues or specimens.

Pathologic diagnosis:
One based on the study of the structural lesions present.

Physical diagnosis:
The determination of disease by inspection, palpation, percussion, or auscultation.

Quick-section diagnosis:
A rapid histological diagnosis made during a surgical operation, of a specimen removed for a study, and prepared for microscopy by frozen section.

Tomographic diagnosis:
One determined by the location of a lesion.

| METHOD | DEFINITION |
|---|---|
| Aspiration biopsy<br>Needle biopsy | The specimen is removed by aspirating it through a hypodermic needle or trocar |
| Endoscopic biopsy | Specimen obtained by long instruments through an endoscope or by a needle from the outside under endoscopic guidance |
| Incisional biopsy | The tumor is cut through for removal without "clear" margins |
| Punch biopsy | Material obtained by use of a punch |
| Sponge biopsy | Material obtained by rubbing surface of lesion with a sponge. The entire sponge is then fixed and processed as a routine surgical specimen. |
| Total biopsy<br>Excisional biopsy | Entire lesion is removed with safe margins and without cutting into it. |

## PREFIXES, SUFFIXES, AND COMBINING FORMS

The following lists have been assembled with the use of Blakiston's NEW GOULD MEDICAL DICTIONARY, Second Edition. The combining forms have been included in the list of prefixes and the list of suffixes, according to usage. The lists would have been more voluminous had other references been employed, but it was decided to depend solely on one source, thereby eliminating the necessity of selection and decision in the event of variations in definitions. Not every prefix, suffix, and combining form has been copied, but only those which appear in this dictionary are listed. The same ruling applies to the examples.

| | |
|---|---|
| a-, an-<br>signifying absence, lack, -less, not (P) | asymptomatic<br>Symptomless; exhibiting no symptoms |
| | anodynia<br>Absence of pain |
| acou-, acouo-<br>denoting relation to hearing (CF) | acouesthenia<br>The hearing sense; usually a very acute sense of hearing |
| acro-, acr-<br>meaning pertaining to extremes or to the extremities (CF) | acrocinesis<br>Markedly excessive motion, as in certain cases of hysteria |
| | acrostealgia<br>Pain in one or more of the bones of an extremity |
| ad-<br>signifying to, toward, near, addition to, and more intense (P) | adorbital<br>Situated near the orbit; toward the orbit |
| adeno-, aden-<br>denoting gland, glandular or relation to glands (CF) | adenitis<br>Inflammation of a gland or lymph node |
| | adenopathy<br>Any glandular disease especially the swelling and enlargement of lymph nodes |
| aero-, aer-<br>denoting air, aerial, or gas, gasses (CF) | aerosis<br>Formation of gas in any of the body tissues |
| | aeropleura<br>Air or gas in the pleural cavity; pneumothorax |

algo-, algio-, alg-
signifying pain, or pertaining to pain (CF)

algogenesis, algogenesia
The source or origin of pain

algiomotor
Causing movements attended with pain

allo-, all-
denoting differentiation from the normal, extraneousness, or reversal (CF)

allergen
Any agent capable of producing a state or manifestation of allergy

allochezia, allochetia
The passage of feces from the body through an abnormal opening; The passing of non-fecal matter from the bowels

ana-
meaning back, up, again, through, excessively (P)

anaplasia
Reversion of form of a cell or cells toward the embryonal, together with increased capacity for multiplication; term often used by morphologists to indicate reversion of form only, without reference to capacity for multiplication

andro-, andr-
signifying male or man, masculine, relating to the male sex (CF)

androgen
A hormone which controls the physiologic status of the secondary sex characteristics of males

android
Resembling the male

angio-, angi-
meaning a vessel or denoting a seed, blood vessel, or pertaining to or covered by (such) a vessel (CF)

angiohypertonia
A condition in which the walls of the blood vessels are constricted; vasoconstriction

angiectopia
Displacement or abnormal position of a vessel

aniso-, anis-
denoting unequal, unsymmetrical, dissimilar (CF)

anisocoria
Inequality in the diameter of the pupils

ano-
signifying anus or anal (CF)

anorectal
Pertaining to the anus and the rectum

ano-
meaning up, upper, upward (CF)

anotropia
The tendency of one eye to latent upward deviation

ante-
denoting before, preceding, in front of, prior to, anterior to (P)

anteaural
In front of the ear

antero-, anter
meaning anterior, front, from front to (CF)

anterointernal
Situated in front to the inner side

arterio-, arteri-
signifying arter, arterial (CF)

arterionecrosis
Necrosis of an artery or arteries

arteriectopia
Displacement or abnormality of the course of an artery

arthro-, arthr-
denoting relation to the joint (CF)

arthritis
Inflammation of a joint

arthropathy
Any joint disease

atelo-, atel-
imperfect or incomplete development (CF)

atelectasos
Collapsed or airless state of all or part of a lung

ateloglossia
Congenital defect in the tongue

auto-, aut-
meaning pertaining to, by, or for oneself or the same individual (CF)

autograft
Any tissue removed from one part of a person's body and applied to another part: commonly used contraction for autogenous graft

baro-
implying heaviness (CF)

barotrauma
Injury of certain organs due to a change in atmospheric pressure or water pressure

bary-
signifying heavy (CF)

baryphonia
A heavy or deep quality of voice

basi-
meaning basis, base, forming a base, relating to the basion, or walking (CF)

basicranial
Referring to the base of the skull

basiphobia
A morbid fear of walking

bi-
meaning two, twice, double; in anatomy, denoting connection with or relation to each of two symmetrically paired parts (P)

bilobate
Having, or divided into, two lobes

bilateral
Relating to two sides; pertaining to or affecting both sides of the body

bio-, bi-,
denoting relation to, or connection with, life, vital phenomena, or living organism (CF)

biopsy
Observation of the living subject, as opposed to necropsy. The excision, during life, of tissue to establish a diagnosis by means of a microscopic examination of the excised piece

biometry
The statistical study of biologic problems; biometrics. Calculation of expectancy of life

| | |
|---|---|
| brachio-, brachi-<br>denoting the arm or connection with the arm (CF) | brachiocyllosia<br>Crookedness of the humerus |
| bronchio-, bronchi-<br>signifying bronchial | bronchiectasis<br>Dilation of bronchi due to an inflammatory or degenerative process |
| | bronchiogenic<br>Bronchogenic |
| broncho-, bronch-<br>signifying relating to a bronchus or to the bronchi (CF) | bronchogenic, bronchiogenic<br>Arising in a bronchus or in the bronchi |
| bucco-<br>denoting of or pertaining to the cheeks (CF) | buccogingival<br>Pertaining to the cheek and the gums |
| celio-, celi-, coelio-, coeli-<br>Denoting abdomen or belly (CF) | celiectasia, coeliectasia<br>Abnormal distention of the abdominal cavity |
| | celioparacentesis, coelioparacentesis<br>Tapping, or paracentesis of the abdomen |
| celphal-, cephalo-<br>denoting the head (CF) | cephaloid<br>Resembling the head; head-shaped |
| | cephalo-orbital<br>Relating to the cranium and the orbits |

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| cheilo-, cheil-, chilo-, chil-<br>denoting relation to the lips (CF) | cheilitis<br>Inflammation of the lips; also called myxadenitis labialis |
| | cheiloschisis<br>Harelip |
| cholo-, choir-, chir-, chiro-<br>pertaining to the hand (CF) | chirology<br>Method of communicating with deafmutes by means of the hands |
| cholo-, chol-<br>denoting bile or gall (CF) | cholangitis<br>Inflammation of the bilary ducts, especially the intrahepatic ducts in the portal canals |
| | cholelithiasis, chololithiasis<br>The presence of, or a condition associated with, calculi in the gallbladder or a bile duct |
| chondro-, chondr-<br>denoting grain, cartilage, composed of cartilage or connection with cartilage (CF) | chondritis<br>Inflammation of a cartilage |
| | chondrogenous<br>Of the nature of a chondrogen; producing cartilage |
| circum-<br>meaning around, about, on all sides (P) | circumvascular<br>Surrounding a blood vessel, or other vessel; perivascular |
| cleido-, cleid-<br>denoting the clavicle, or pertaining to the clavicle (CF) | cleidoscapular<br>Relating to the clavicle and the scapula |
| clinico-<br>denoting clinical (CF) | clinicohematologic<br>Relating to both clinical and blood problems |

colpo-, colp-
denoting connection with or relating to the bagina (CF)

colpocele
Hernia or tumor of the vagina

colpectasia
Dilation of the vagina

contra-
against, contrary, or in opposition (P)

contraindication
A symptom, indication, or condition in which a remedy or a method of treatment is inadvisable

contralateral
Acting in usison with a similar part of the opposite side of the body

costo-
denoting a rib (CF)

costochondral
Pertaining to the ribs and their cartilages

cranio-
denoting the cranium, the fetal head, cranial (CF)

craniofacial
Pertaining to the cranium and the face

cryo-, cry-
meaning cold or freezing (CF)

cryotherapy
A form of therapy which consists of local or general refrigeration

cryocautery
The destruction of tissues by application of extreme cold which causes an obliterative thrombosis

cryesthenia
Sensitiveness to cold

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| cyano-, cyan-<br>meaning dark blue (CF) | cyanosis<br>A bluish tinge in the color of mucous membranes and skin, due to the presence of excessive amounts of reduced hemoglobin in capillaries, less frequently to the presence of methemoglobin |
| cysto-, cyst-<br>denoting likeness to or connection with a bladder or cyst (CF) | cystitis<br>Inflammation of the urinary bladder, involving principally the mucosa and submucosa |
| | cystocele<br>Herniation of the urinary bladder into the vagina |
| | cystomorphous<br>Having the structure of, or resembling, a cyst or bladder |
| de-<br>denoting down, away from, separation, off, away; intensification, completely, quite; or the reversing or undoing of an action, depriving or ridding of, or freeing from (CF) | deallergization<br>The neutralization or inactivation of antibodies by any therapeutic means |
| | dehydration<br>The removal of water, as from the body or a tissue |
| | defemination<br>The loss or diminution of female characteristics |
| denti-, dent-<br>meaning tooth or dental (CF) | dentification<br>Formation of teeth |

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| derma-, dermato-, dermat-<br>meaning skin or hide (CF) | dermatitis<br>Inflammation of the skin |
| | dermatalgia<br>Pain, burning, and other sensation of the skin, unaccompanied by any structural change |
| | dermatotherapy<br>Treatrent of cutaneous affections |
| desmo-, desm-<br>meaning bond, ligament, or fastening (CF) | desmoid<br>Like a ligament; fibrous |
| | desmoplasia<br>The formation and proliferation of connective tissue; frequently prominent proliferation of connective tissue in the growth of tumors; formation of adhesions |
| dextro-<br>meaning toward, of, or pertaining to the right (CF) | dextrocerebral<br>Located in the right cerebral hemisphere |
| dia-, di-<br>denoting through, between apart, asunder, or across (P) | diapedesis<br>Passage of blood cells, especially erythrocytes, through the unruptured vessel walls into the tissues |
| dis-, di-<br>signifying two, twice, or double (P) | diotic<br>Pertaining to both ears |
| dis-<br>meaning separation, the opposite of, reversal (P) | dislocation<br>The displacement of one or more bones or a joint or any organ from the original position |

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| dys-<br>in medicine, difficult or painful; faulty or impaired; abnormal or morbid (P) | dysbasia<br>Difficulty in walking<br><br>dysmenorrhea<br>Difficult or painful menstration |
| e-<br>denoting without, out, out of, from (P) | edentate<br>Without teeth |
| ec-<br>denoting out of (P) | ecchymosis<br>An extravasation of blood into the subcutaneous tissues |
| ecto-, ect-<br>signifying without, upon the outer side (CF) | ectocornea<br>The outer layer of the cornea |
| en-<br>signifying in, into (P) | enostosis<br>A bony ingrowth within the medullary canal of a bone<br><br>encapsulated<br>Enclosed in a capsule or sheath |
| encephal-, encephalo-<br>meaning brain (CF) | encephalitis<br>Inflammation of the brain<br><br>encephalogram<br>A roentgenogram of the brain made in encephalography |
| endo-, end-<br>signifying within (CF) | endobronchial<br>Within a bronchus<br><br>endarterial<br>Within an artery |

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| entero-, enter-<br>denoting the intestine (CF) | enteritis<br>Inflammation of the intestine |
| | enterostasis<br>Intestinal stasis; delay in the passage of the intestinal contents |
| ento-, ent-<br>signifying within, inner (CF) | entoptic<br>Pertaining to the internal parts of the eye |
| | entoderm<br>The innermost of the three primary germ layers, which forms the lining of the gut, from pharynx to rectum, and its derivatives. Syn. endoderm |
| epi-, ep-<br>upon, beside, among, above, anterior, over, on the outside (P) | epidemis<br>Top layer of the skin; the protective, epithelial outer layer of the skin |
| | eponychium<br>The horny layer (stratum corneum) of the nail fold attached to the nail plate at its margin |
| exo-, ex-<br>signifying outside, outer layer, out of (P) | exostosis<br>Benign tumor of bone usually seen as a cartilage-capped bony growth protruding from the surface of the bone |
| | exogenous<br>Due to an internal cause; not arising within the organism |
| extra-<br>denoting outside of, beyond the scope of (P) | extramural<br>Outside the wall of an organ |

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| febri-<br>meaning fever (CF) | febrifacient<br>Producing fever |
| fibro-, fibr-<br>Signifying pertaining to fibers, relation to fibrous tissue or structure (CF) | fibrosis<br>Growth of white fibrous connective tissue in an organ or part in excess of that naturally present |
| | fibrocellular<br>Both fibrous and cellular |
| gastrop, gastr-<br>meaning stomach or belly (CF) | gastritis<br>Inflammation of the stomach |
| | gastrocolic<br>Pertaining to the stomach and the colon |
| genito-<br>signifying genital (CF) | genitourinary<br>Relating to the genitalia and the urinary organs or functions |
| glosso-, gloss-<br>meaning tongue (CF) | glossolabial<br>Relating to the tongue and lips, as glossolabial paralysis |
| hemi-<br>meaning half; in medicine, denoting either the right or the left half of the body (P) | hemiplegia<br>Paralysis of one side of the body |

hemo-
signifying of or pertaining to the blood (CF)

hemorrhage
An escape of blood from the vessels, either by diapedesis through intact walls or by flow through ruptured walls

hepatico-
hepatic (liver) (CF)

hepaticopancreatic
Pertaining to the liver and the pancreas

hepato-, hepat-
denoting the liver, hepatic (CF)

hepatitis
Inflammation of the liver

hepatosplenomegaly
Enlargement of the liver and the spleen

hetero-, heter-
signifying other, other than usual, different (CF)

heterogeneous
Differing in kind or nature composed of different substances; not homogeneous

heteropsia
Inequality of vision in the two eyes

heteradenia
Any abnormality in the formation or location of gland tissue

histio-, histi-
meaning web, cloth, tissue (CF)

histiocytosis
Proliferation of histiocytes, especially in lymph nodes and other organs of the hematopoietic system

histo-, hist-
denoting tissue (CF)

histology
The branch of biology which deals with the minute structure of tissues; microscopic anatomy

histoid
Resembling tissue. Composed of only one kind of tissue

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| hyper-<br>abnormal or excessive; in anatomy and in zoology, denoting position above (P) | hyperglycemia<br>Excess of sugar in the blood |
| hypo-, hyp-<br>denoting deficiency or lack; below or beneath (P) | hypoglycemia<br>The condition produced by a low level of glucose in the blood |
| | hypoxia<br>Oxygen want or deficiency |
| | hypobranchial<br>A bone or cartilage located below or under the branchial or visceral arches |
| hystero-, hyster-<br>denoting connection with, or relation to, the uterus or to hysteria (CF) | hysterolysis<br>Severing the attachments or adhesions of the uterus |
| | hysteroid<br>Resembling hysteria |
| in-<br>signifying in, into, within, on, toward; also denoting negation (not, non-, un-) (P) | infiltrate<br>To pass tissue spaces or cells, as fluids, cells, or other substances |
| infra-<br>signifying below or beneath, inferior, or within (P) | infracardiac<br>Situated below or beneath the heart |
| inter-<br>signifying between or among, mutual, intervening, or within (P) | interlobar<br>Situated between lobes, as interlobar pleurisy |
| | intermural<br>Situated between the walls of an organ |

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| intra-<br>signifying within or into. In anatomy, denoting situated within a specified part (P) | intralobar<br>Within a lobe<br><br>intraluminal<br>Within the lumen of a hollow or tubelike structure |
| ischo-, isch-<br>denoting suppression, checking stoppage, or deficiency (CF) | ischomenia<br>Suppression of the menstrual flow<br><br>ischuria<br>Retention or suppression of the urine |
| kerato-, kerat-<br>meaning horn or denoting horny tissue. In anatomy, medicine, and surgery, denoting the cornea (CF) | keratosis<br>Any disease of the skin characterised by an overgrowth of the cornified epithelium<br><br>keratomalacia<br>A softening of the cornea |
| labio-<br>denoting the lips, labial (CF) | labiogingival<br>Pertaining to the lips and the gums |
| laryngo-, laryng-<br>denoting the lips, labial (CF) | laryngopharyngeal<br>Pertaining conjointly to the larynx and the pharynx |
| leuco-, leuko-, leuc-, leuk-<br>meaning white, colorless. In medicine, denoting a whitish decolorization (CF) | leukopenia<br>A decrease below the normal number of leukocytes in the peripheral blood |

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| lipo-, lip-<br>denoting fatty, fat | lipocyte<br>A fat cell |
| macro-, macr-<br>denoting an enlargement (CF) | macroscopic<br>Large enough to be seen with the naked eye; not microscopic |
| masto-, mast-<br>denoting the breast (CF)<br>denoting mastoid (breast-shaped) (CF) | mastalgia<br>Pain in the breast<br>mastoplasia<br>Hyperplasia of breast tissue |
| mega-, meg-<br>signifies great, extended, enlarged (CF) | megaduodenum<br>Idiopathic dilatation of the duodenum |
| megalo-, megal-<br>meaning large, great; used especially to denote abnormal enlargement (CF) | megalogastria<br>Abnormal enlargement of the stomach |
| melano-, melan-<br>signifying dark-colored, or relating to melanin (CF) | melanoderma, melanodermia<br>Black pigmentation of the skin<br>melanosis<br>Dark brown or brownish black pigmentation of |
| meningo-, mening-<br>meaning membrane or denoting the meninges (CF) | meningomyelitis<br>Inflammation of the spinal cord and its mininges<br>meninguria<br>The passage, or presence, of membranous shreds in the urine |

meso-, mes-
signifying middle. In anatomy, denoting an intermediate connective part, mesentery; in medicine, denotes partial or secondary (CF)

mesoderm
The third germ layer, lying between the ectoderm and entoderm

mesocolon
The mesentery connecting the colon with the posterior abdominal wall

meta-, met-
among, afterwards, beyond, over, between, chang, transformation; in anatomy, denoting dorso- (P)
in medicine, denoting post- (P)

metaplasia
Transformation of one form of adult tissue to another, such as replacement of respiratory epithelium by stratified squamous epithelium

metro-, metr-
denoting relation to the uterus (CF)

metrorrhagia
Uterine hemorrhage independent of the menstrual period

micro-, micr-
denoting microscopic; in medicine signifying abnormally small (CF)

microcardia
Congenital smallness of the heart

mio-
denoting smaller, less. In medicine, denoting decrease or contraction (CF)

miocardia
The systolic diminution of the volume of the heart

multi-
meaning many, much; in medicine, signifying affecting many parts (CF)

multilobular
Having many lobules

myelo-, myel-
denoting myelin, the spinal cord, or the bone marrow (CF)

myelofibrosis
Fibrosis of the bone marrow

myeloparalysis
Paralysis of the spine

myelitis
Inflammation of the spinal cord; inflammation of the bone marrow

myo-, my-
denoting a muscle (CF)

myoblast
A cell which develops into a muscle fiber

myxo-, myx-
relating to mucus or mucoid (P)

meaning mucus; denotes a mucous gland or mucous tissue (CF)

myxoid
Like mucus

myxorrhea
A copious mucous discharge

myxadenitis
Inflammation of a mucous gland

naso-
denoting connection with, or relation to, the nose (CF)

nasofrontal
Pertaining to the nasal and the frontal bones

neo-, ne-
meaning new or recent. In biology, signifying an immature form, a recently formed part, or an abnormal new formation (CF)

neoplasia
Formation of new tissue. Formation of tumors or neoplasms

nephro-, nephr-
meaning kidney (CF)

nephrolithiasis
The formation of renal calculli, or the diseases state that leads to their formation

necphrectasia
Dilatation of a kidney

neuri-
denoting a nerve (CF)

neurilemma
The thin cellular sheath of peripheral nerve fibers, covering the axon directly or covering the myelin sheath when this is present

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| neuro-, neur-<br>denoting a nerve, nervous tissue, or the nervous system (CF) | neurogenic<br>Of nervous origin, as neurogenic tumors. Stimulated by the nervous system, as neurogenic muscular contractions |
| | neurosis<br>A disorder of the psyche or psychic functions |
| non-<br>meaning not (P) | nonallergeric<br>Unrelated to allergy |
| odonto-, odont-<br>meaning tooth (CF) | ondontoid<br>Resembling a tooth; toothlike, or pertaining to the dens of the axis, as odontoid ligament |
| | odontonecrosis<br>Necrosis or decay of the tissues of the teeth. Dental caries |
| oligo-, olig-<br>meaning few, scant; used in medicine to denote deficiency (CF) | oligemia<br>A state in which the total quantity of the blood is diminished |
| | oligohydria<br>Deficiency of the fluids of the body (also olighydria) |
| onco-, oncho-<br>in medicine, to denote a tumor (CF) | oncology<br>The study or science of neoplastic growth |

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| oophoro-, oophor-<br>denoting an ovary or ovarian (CF) | oophorosalpingitis<br>Inflammation of an ovary and oviduct |
| ophthalmo-, ophthalm-<br>meaning eye (CF) | opthalmalgia<br>Neuralgia of the eye |
| | opthalmoplegia<br>Paralysis of the ocular muscles |
| opto-<br>denoting vision or optic (CF) | optometry<br>Measurement of the visual powers |
| orchio-, orchi-<br>meaning testis (CF) | orchiopathy<br>Any disease of the testis |
| oro-<br>meaning mouth or oral (CF) | oropharynx<br>The oral pharynx, situated below the level of the lower border of the soft palate and above the larynx, as distinguished from the nasopharynx and the laryngeal pharynx |
| ortho-, orth-<br>denoting straight, normal, or true (CF) | orthopnea<br>A condition in which there is need to sit up to breathe more easily |
| osteo-, oste-<br>meaning bone (CF) | osteitis<br>Inflammation of the bone |
| | osteofibrosis<br>Fibrosis of bone; a change involving mainly the red bone marrow |
| oto, ot-<br>meaning the ear (CF) | otalgia<br>Pain in the ear |
| | otoplasty<br>Plastic surgery of the external ear |

pachy-
meaning thick (CF)

pachyacria
A condition marked by clubbing of the fingers and toes, and thickening of the skin of the extremities

pan-
in medicine, signifies general or affectiong all or many parts (CF)

pansinusitis
Inflammation of all the paranasal sinuses

panarteritis
Inflammation of all the coats of an artery. Inflammation of several arteries at the same time

para-, par-
in medicine, dentoing a faulty or abnormal condition, associated in an accessory capacity, remotely or indirectly related to, or almost, closely resembling (P)

parapneumonia
A disease presenting the symptoms of lobar pneumonia, but not due to the pneumococcus

parasacral
Beside, or near, the sacrum

paresthesia
A perverted sensation of tingling, crawling, or burning of the skin, which occurs in peripheral neuritis and spinal-cord lesions

patho-, path-
denoting disease, pathologic (CF)

pathosis
A diseased condition, abnormality, or pathologic finding

pathology
That branch of biological science which deals with the nature of disease, through study of its causes, its process, and its effects, together with the associated alterations of structure and function

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| peri-<br>signifying around, about, beyond, near; especially, enclosing a part or affecting the tissues around a part (P) | peribronchial<br>Surrounding or occurring about a bronchus |
| pneumono-, pneumon-<br>meaning lung (CF) | pneumonopexy<br>Fixation of lung tissues to the chest wall |
| poly-<br>meaning much or many; in medicine denoting excessive, affecting many parts, or of diverse origin (CF) | polycystic<br>Containing many cysts<br>polyneural, polyneuric<br>Pertaining to, or supplied by, several nerves |
| post-<br>denoting after, behind, or subsiquent (P) | postnasal<br>Situated behind the nose, or in the nasopharynx |
| postero-<br>signifying posterior (CF) | posterolateral<br>Situated behind and at the side of a part |
| procto-, proct-<br>meaning anus; used to denote the rectum (CF) | proctocele<br>The extroversion or prolapse of the mucous coat of the rectum |
| pre-<br>meaning before (P) | precardiac<br>Anterior to the heart<br>preataxic<br>Occurring before ataxia |
| pro-<br>signifying for, before, in front of (P) | prochondral<br>Prior to the formation of cartilage |
| proto-, prot-<br>meaning first (CF) | protospasm<br>A spasm beginning in one part and extending to others |

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| psycho-, psych-<br>denoting mind, mental processes, psychologic methods (CF) | psychocortical<br>Pertaining to that part of the cerebral cortex concerned in the perception of sensations |
| pyo-, py-<br>meaning suppuration, accumulation of pus or related to pus formation (CF) | pyonephritis<br>Suppurative inflammation of a kidney<br>pyosis<br>Suppuration; pus formation |
| pyelo-<br>denoting relation to the pelvis of the kidney (CF) | pyeloplasty<br>Plastic repair of the renal pelvis |
| pyro-, pyr-<br>denoting fever (CF)<br>fire, heat | pyrotoxin<br>A toxic agent generated in the course of the febrile process |
| rachio-, rachi-<br>meaning the spine (CF) | rachioplegia<br>Paralysis of the spine<br>rachicentesis<br>Puncture into the subarachnoid space; lumbar puncture |
| recto-<br>denoting rectum or rectal (CF) | rectocele<br>Prolapse of the rectum into the vagina |
| retro-<br>meaning back, backward, or behind (CF) | retrocolic<br>Behind the colon |
| rhino-, rhin-<br>meaning the nose (CF) | rhinopharyngeal<br>Pertaining to the nose and pharynx, or to the naso-pharynx |

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| sacro-<br>meaning relating to the sacrum (CF) | sacroiliac<br>Pertaining to the sacrum and the ilium |
| salpingo-, salping-<br>used to denote relation to an auditory tube or a uterine tube (CF) | salpingopalatine<br>Pertaining to the auditory tube and the palate |
| | salpingoplasty<br>Surgery of a uterine tube |
| semi-<br>denoting half (P) | semicoma<br>A condition of mild or partial coma |
| sinistro-, sinistr-<br>denoting left or toward the left side (CF) | sinistrocardial<br>Having the heart displaced to the left |
| sino-<br>denoting sinus (CF) | sinobronchitis<br>Inflammation of the bronchi and the paranasal sinuses |
| spleno-, splen-<br>pertaining to the spleen (CF) | splenomegaly<br>Enlargement of the spleen |
| spondylo-, spondyl-<br>pertaining to a vertebra (CF) | spondylolysis<br>Dissolution or destruction of a vertebra |
| steno-<br>meaning narrow or constricted (CF) | stenocephaly, stenocephalia<br>Unusual narrowness of the head |
| stomato-, stomat-<br>meaning mouth (CF) | stomatosis<br>Disease of the mouth |

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| sub-<br>Under, beneath, deficient (P) | subclavian<br>Lying under the clavicle, as the subclavian artery |
| | subcutaneous<br>Beneath the skin; hypodermic |
| | subnormal<br>Below normal |
| super-<br>denoting above, upon, or excessive (P) | superacute<br>Extremely acute |
| | superacidity<br>Hyperacidity |
| supra-<br>signifying upon or above (P) | supraglottic<br>Above the glottis |
| tachy-<br>meaning swift (CF) | tachycardia<br>Excessive rapidity of the heart's action |
| teno-, ten-<br>pertaining to a tendon (CF) | tenodisis<br>Fixation of a tendon, as to a bone |
| thermo-<br>meaning heat (CF) | thermocoagulation<br>A method of destroying tissue by means of electrocautery or high frequency current; a method by which one or several layers of the cerebral cortex in a desired area can be destroyed without alteration of the surrounding tissue |
| thrombo-, thromb-<br>denoting pertaining to | thrombophilia<br>A tendency to form thrombi |

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| topo-, top-<br>meaning place; used to signify localized (CF) | topognostic<br>Pertaining to the recognition of changes, positions, or symptoms of parts of the body, as topognostic sensibility |
| toxico-, toxic-, toxo-, tox-<br>meaning poison (CF) | toxemia<br>A condition in which the blood contains poisonous products, either those produced by the body cells or those due to the growth of microorganisms. It is a general involvement in which the blood contains toxins but not bacteria |
| | toxicodermatitis<br>skin inflammation due to poison |
| | toxicoid<br>Resembling a poison or toxin |
| trachelo-, trachel-<br>meaning neck (CF) | trachelopexia<br>Surgical fixation of the neck of the uterus |
| | trachelagra<br>Rheumatic or gouty pain in the neck |
| tracheo-, trache-<br>denoting connection with, or relation to, the trachea (CF) | tracheobronchial<br>Pertaining to the trachea and a bronchus or the bronchi |
| | tracheitis<br>Inflammation of the trachea |
| trans-<br>denoting through or across (CF) | transurethral<br>Via the urethra, as transurethral operation |
| tri-<br>denoting three (CF) | trichromatopsia<br>Normal color vision; ability to see the three primary colors |

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| tricho-, trich-<br>meaning hair (CF) | trichology<br>The science of the hair and its diseases |
| uni-<br>meaning one (CF) | unilateral<br>Pertaining to, or affecting, but one side |
| uro-, ur-, urino-, urin-<br>denoting urine (CF) | uroplania<br>Urine elsewhere than in the urinary organs; discharge of urine from an orifice other than the urethra |
| vagino-, vagin-<br>denoting the vagina (CF) | vaginitis<br>Inflammation of the vagina; Inflammation of the sheath |
| vaso-, vas-<br>signifying the blood vessels, ductus deferens, or vasomotor (CF) | vasodilatation<br>Dilatation of the blood vessels<br>vasitis<br>Inflammation of the vas or ductus deferens |
| ventro-<br>denoting the abdomen or anterior aspect of the body (CF) | ventromedian<br>At the middle of the ventral surface |
| vesico-<br>denoting bladder (CF) | vesicoprostatic<br>Pertaining to the prostate gland and the urinary bladder |

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| vulvo-, vulv-<br>denoting the vulva (CF) | vulvovaginitis<br>Inflammation of the vulva and of the vagina existing at the same time |
| xeno-, xen-<br>meaning strange or foreign (CF) | xenophthalmia<br>Conjunctivitis due to injury |
| | xenomenia<br>Vicarious menstruation |
| xero-, xer-<br>meaning dry (CF) | xeroderma, xerodermia<br>An abnormal dryness of the skin; ichthyosis |
| | xerosis<br>A state of dryness, especially of the skin or of the conjunctive |
| zoo-, zo-<br>denoting animal or pertaining to an animal (CF) | zoology<br>The study of animals |

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| -ad<br>indicating direction toward (S) | cephalad<br>Toward the head |
| -al<br>belong to, of or pertaining to, having the characteristics of, appropriate to (S) | occipital<br>Pertaining to, or in relation with, the occiput (back part of the head) |
| -algia<br>denoting pain (S) | arthralgia<br>Pain in a joint |
| -cele<br>denoting a tumor, hernia, pathologic swelling, or cavity (S) | enterocele<br>A hernia containing a loop of intestine |
| -cyte<br>denoting a cell (S) | leukocyte<br>One of the colorless, more or less ameboid cells of the blood, having a nucleus and cytoplasm |
| -derm<br>signifying skin, integument, or covering (S) | ectoderm<br>The outermost of the three primary germ layers of the embryo |
| -ectomy<br>denoting surgical removal (CF) | appendectomy<br>Excision of the veriform appendix |

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| -fuge<br>denoting that which causes to flee, or drives away (CF) | vermifuge<br>Any agent that kills or expels intestinal worms |
| -gen<br>in biology, denoting a thing produced or generated (CF) | carcinogen<br>1. A substance or agent causing development of a carcinoma or epithelioma<br>2. Loosely a substance or agent causing development of a malignancy of any sort: more properly called a cancerogen |
| -genesis<br>signifying origination, development, evolution of a thing or type (CF) | pathogenesis<br>The course of development of disease, including the sequence of processes or events form inception to the characteristic lesion or disease |
| -ism<br>condition or disease from (S) | embolism<br>The occlusion of a blood vessel by an embolus (matter foreign to the blood stream) |
| -itis<br>in medicine, denotes a disease specifically, an inflammatory disease of a (specified) part (S) | hepatitis<br>Inflammation of the liver |
| -oid<br>signifying like or resembling (S) | desmoid<br>Like a ligament; fibrous |
| -ology<br>signifying a science, or a special line of study (CF) | endocrinology<br>The study of the internal secretions and the endocrine glands |

-oma
a morbid affection, usually a tumorlike nodule or swelling (S)

carcinoma
An epithelial tumor which is malignant

-osis
signifying state, process, or condition (S)

pathosis
A diseased condition, abnormality or pathologic finding

leucocytosis
Increase in the leukocyte count above normal limits

pachylosis
A thick dry, harsh, and scaly skin, especially of the legs

-phobia
denoting fear or dread (CF)

hydrophobia
Fear of water

-plasty
denoting plastic surgery (CF) (building up tissues, restorating lost parts, repairing or rectifying malformations or defects)

pyeloplasty
Plastic repair of the renal pelvis

-ptosis
meaning a lowered position of an organ (CF)

enteroptosis
Prolapse of the intestine

-rrhagia
in medicine, signifies abnormal or excessive discharge (CF)

otorrhagia
Hemorrhage from the ear

-rrhaphy
in surgery, meaning a sewing or suturing, usually of an immediate or recent injury or laceration (CF)

enterorrhaphy
Sewing up a gap in the intestine. Suture of the intestine

| | |
|---|---|
| -scope<br>denoting an instrument for seeing or examining (CF) | pharyngoscope<br>An instrument for use in examining the pharynx |
| -scopy<br>denoting inspection or examination (CF) | pharyngoscopy<br>Examination of the pharynx |
| -tomy<br>denoting a cutting operation (CF) | gastrotomy<br>Incision into the stomach |

| Abbreviation | Meaning |
|---|---|
| A.A. (a.a.) | Of each |
| A.B.C. | Axiobuccocervical |
| Abdom. | Abdomen |
| A.B.G. | Axiobuccogingival |
| A.B.L. | Axiobuccolingual |
| a.c. | before meals |
| A.C. | Air conduction |
| A.C. and B.C. | Air and bone conduction (as in Weber's test) |
| Acc. | Accommodation |
| A.C.D. | Absolute cardiac dullness |
| A.C.E. | Adrenocortical extract |
| A.C.F. | Accessory clinical findings |
| A.C.R. | Anticonstipation regime |
| A.C.S. | American College of Surgeons |
| ACTH | Adrenocorticotrophic hormone |
| A.D. | right ear |
| add. | add; let there be added |
| ad lib. | at pleasure; at discretion |
| Adv. | against |
| Aeg. | the patient |
| aet | At the age of |
| A.F. | Acid-fast |
| A/G ratio | Albumin-globulin ratio |
| AgNo3 | Silver nitrate |
| ah | Hypermetropic astigmatism |
| A.H.A. | American Hospital Association |
| A.I. | Aortic insufficiency |
| A.J. | Ankle jerks |
| alb. | Albumin |
| Alt. dieb. | every other day |
| Alt. hor. | every other hour |

| Abbreviations | Meaning |
|---|---|
| Alt. noct. | every other night |
| A.M. | before noon |
| A.M.A. | American Medical Association |
| amh. | Mixed astigmatism with exceeding myopia |
| an. | Anisometropia (eyes which require different refractive corrections) |
| Anes. | Anesthesia |
| Ante | before |
| $A_2$ $P_2$ | Aortic 2nd heart sound is greater than pulmonic 2nd sound |
| A.P. | Anteroposterior |
| aq. | water |
| aq. com. | common water |
| aq. dist. | distilled water |
| As. | Astigmatism |
| a.s. | left ear |
| A.S. | Aortic stenosis |
| As.H. | Hypermetropic astigmatism |
| As.M. | Myopic astigmatism |
| A.S.S. | Anterior superior spine |
| Ast. | Astigmatism |
| A.T.S. | Antitetanic serum |
| A.V. | Auriculoventricular |
| ax. | Axis |
| A.Z. Test | Aschheim-Zondek test for pregnancy |
| B. | Bacillus |
| Ba. | Barium |
| Bact. | Bacterium |
| Ba. enem. | Barium enema |
| B.B.A. | Born before arrival |
| B.C. | Bone conduction |

| Abbreviations | Meaning |
|---|---|
| Benz. | Benzidine |
| bib. | drink |
| b.i.d. | twice a day |
| B.J. | Biceps jerk |
| B.M. | Bowel movement |
| B.M.R. | Basal metabolic rate |
| B.O.A. | Born on arrival |
| Bol. | pill |
| B.P. | Blood pressure |
| B.P.H. | Benign prostatic hypertrophy |
| B.S. | Breath sounds |
| B. & S. | Bartholin and Skene glands |
| B.S.S. | Black sild sutures |
| B.T. (b.t.) | Brain tumor |
| $\overline{c}$. | with |
| C. | Centigrade |
| $C_1$; $C_2$; etc. | First cervical vertebra; Second cervical vertebra; etc. |
| Ca. | Carcinoma |
| cal. | Small calorie |
| Cal. | Large calorie |
| Cap. | let him take |
| cap. | capsule |
| Cardio. | Cardiology |
| Cath. | Cathartic |
| c.b.c. | Complete blood count |
| cc. | Cubic centimeters |
| C.C. | Chief complaint |
| cd. | Caudal or coccygeal |
| C.D.C. | Calculated date of confinement |
| cf. | Compare, or refer to |
| C.F.T. | Complement-fixation test |

| Abbreviation | Meaning |
|---|---|
| $CHI_3$ | Iodoform |
| chr. | Chronic |
| C.I. | Color index |
| cm. | Centimeter |
| C.M. | tomorrow morning |
| c.m. | Costal margin |
| C.N. | tomorrow night |
| C.N.S. | Central nervous system |
| $CO_2$ | Carbon dioxide |
| Cont. | bruised |
| C.P.C. | Clinical Pathological Conference |
| Cs. | Consciousness |
| C.S.F. | Cerebrospinal fluid |
| Cuj. | of which |
| C.V. | Cardiovascular |
| C.V.A. | Cerebrovascular accident |
| c.v.a. | Costovertebral angle |
| C.V.R. | Cardiovascular-respiratory |
| Cx. | Convex |
| cyl, | Cylindrical lens |
| $D_1$; $D_2$; etc. | First dorsal vertebra; Second dorsal vertebra; etc. |
| D.A.H. | Disordered action of heart |
| D. & C. | Dilation and curettage |
| D. Cx. | Double convex |
| D.D. | Dry dressing |
| decub. | lying down |
| De d. in d. | from day to day |
| Deg. | Degree; degeneration |
| Deglut. | let it be swallowed |
| De R | Reaction of degeneration |
| Derm. | Dermatology |

| Abbreviation | Meaning |
|---|---|
| Det. in dup. | let twice as much be given |
| Dieb. alt. | on alternate days |
| Dieb. tert. | every third day |
| diff. | Differential blood count |
| dil. | dissolve |
| Dim. | One-half |
| div. | Divide |
| D.M.F. | Decayed, missing and filled teeth |
| D.O.A. | dead on arrival |
| D.P.D. | Department of Public Dispensary |
| dr. | dram |
| D.T.D | Dispense of such doses |
| D.T.N. | Diphtheria toxin normal |
| Dur. dolor | While the pain lasts |
| d.y. | Double vibrations |
| DX (DX) | Diagnosis |
| E.A.H.F. | Eczema, allergy, hay fever |
| ecg | Electrocardiogram |
| E.C.T. | Electric convulsive treatment |
| E.D.C. | Expected (or estimated) date of confinement |
| E.E.G. | Electroencephalogram, -graph |
| E.E.N.T. | Eye, ear, nose and throat |
| e.g. | for example |
| E.J. | Elbow jerk |
| EK, EKG, Ekg. | Electrocardiogram, -graph |
| Em. | Emmetropia (normal vision) |
| Endocrin. | Endocrinology |
| E.N.T. | Ear, nose and throat |
| E.O.M. | Extraocular movements |
| E.S.R. | Erythrocyte sedimentation rate |
| Etiol. | Etiology |
| ext. | extract; e.g., fluid extract |

| Abbreviations | Meaning |
|---|---|
| F. | Fahrenheit |
| F. and R. | Force and rhythm (of pulse) |
| F.B. (f.b.) | Fingerbreadth |
| F.D. | Focal distance |
| F.H. | Family history |
| F.H.S. (f.h.s.) | Fetal heart sounds |
| Fl. (fld.) | fluid |
| fl. dr. | Fluid dram |
| Fl. oz. | Fluid ounce |
| fluor. | Fluoroscopy |
| F.P. | Flat plate |
| F.S.H. | Follicle-stimulating hormone |
| G.A. | Gastric analysis |
| G.B. | Gallbladder |
| GC. | Gonorrhea |
| G.E. | Gastroenterology |
| Gen'l. | Generalized |
| G.G.E. | Generalized glandular enlargement |
| G.I. | Gastrointestinal |
| gm. | Gram |
| G.O.E. | Gas, oxygen and ether anesthesia |
| G.P. | General practitioner |
| gr. | grain |
| G.S.W. | Gunshot wound |
| gt. | drop |
| gtt. | drops |
| G.U. | Genitourinary (urogenital) |

| Abbreviation | Meaning |
|---|---|
| G.V. | Gentian violet |
| Gyn. | Gynecology |
| h. | hour |
| Hb. | Hemoglobin |
| HCl | Hydrochloric acid |
| H.C.V.D. | Hypertensive cardiovascular disease |
| H.d. | at bedtime |
| H.D. | Hearing distance |
| Hg. | mercury |
| Hgb. | Hemoglobin |
| $H_2O$ | Water |
| H. + Hm. | Compound hypermetropic astigmatism |
| /HPF | Per high-power field |
| h.s. | at bedtime |
| H.V.D. | Hypermetropia |
| Id. (id.) | the same |
| I.M. | Intramuscular |
| Imp. | Impression |
| in. | Inch |
| In d. (in d.) | daily |
| in extremis | At the point of death |
| inf. | Infected |
| inj. | Injection |
| Int. Med. | Internal Medicine |
| I.Q. | Intelligence quotient |
| I.S. | Intercostal space |
| I.V. | Intravenous |
| J.J. | Jaw jerk |
| Kg. | Kilogram (2.2 pounds) |
| K.I. | Krönig's isthmus |

| Abbreviation | Meaning |
|---|---|
| KI | Potassium iodide |
| k.j. | Knee jerk |
| k.k. | Knee kick |
| K.U.B. | Kidney, ureter and bladder |
| L. (l.) | Liter |
| $L_1$; $L_2$; etc. | First lumbar vertebra; Second lumbar vertebra; etc. |
| Lt. (lt.) | Left |
| L. & A. (l/a) | Light and accommodation (this is a reaction of the pupils) |
| Lat. (lat.) | Lateral |
| lb. | Pound |
| L.B.D. | Left border of dullness (of heart to percussion) |
| L.C.M. | Left costal margin |
| L.H. | Luteinizing hormone |
| L.I.F. | Left iliac fossa |
| liq. | a liquid solution; liquid |
| L.L. | Large lymphocytes |
| L.L.Q. | Left lower quadrant |
| L.M.D. | Local medical doctor |
| L.M.P. | Last menstrual period |
| L.O.A. | Left occipitoanterior |
| L.S.K. | Liver, spleen and kidneys |
| L.U.Q. | Left upper quadrant |
| L. & W. | Living and well |
| M. | Monocytes |
| $M_1$ | Mitral first sound |
| M.A. | Mental age |
| M + Am. | Compound myopic astigmatism |
| Man.pr. | early in the morning |
| McB. pt | McBurney's point |

| Abbreviation | Meaning |
|---|---|
| M.C.H.C. | Mean corpuscular hemoglobin count |
| M.C.L. | Mid-clavicular line |
| M.C.V. | Mean corpuscular volume |
| Med. | Medicine (or medical) |
| mg. | Milligram |
| M.H. | Marital history |
| M.I. | Mitral insufficiency |
| Mic. | Microscopic findings of centrifuged urinary sediment |
| min. | one-sixtieth of a dram |
| M.M. | Mucous membranes |
| mm. | Millimeter |
| mm. Hg. | Millimeters of mercury |
| M.S. | Mitral stenosis |
| M.S.L. | Mid-sternal line |
| My. | Myopia |
| NaCl | Sodium chloride (common salt) |
| N.A.D. | No appreciable disease |
| N. and V. | Nausea and vomiting |
| N.B. | New born |
| N.C.A. | Neurocirculatory asthenia |
| neg. | Negative |
| Neuro. | Neurology |
| N.G.R. | Narrow gauze roll |
| $N_2O$ | number |
| noct. | at night |
| N.P.N. | Nonprotein nitrogen |
| N. Surg. | Neurosurgery |
| N.T.P. | Normal temperature and pressure |
| Nv. | Naked vision |
| O.B. (Ob.) Obs.) | Obstetrics |

| Abbreviation | Meaning |
|---|---|
| O.B.-Gyn. | Obstetrics and Gynecology |
| O.D. | right eye |
| ol. | oil |
| ol. oliv. | Olive oil |
| omn. hor. | every hour |
| omn noct. | enery night |
| O.P.C. | Outpatient clinic |
| O.P.D. | Outpatient dispensary |
| Ophth. | Ophthalmology |
| O.R. | Operating room |
| Orth. | Orthopedics |
| Osteo. | Osteomyelitis |
| O.T. | Old tuberculin |
| Oto. | Otology |
| O.U. | each eye |
| Ov. | egg |
| P. | Pulse |
| $P_2$ | Pulmonic second sound |
| P. & A. | Percussion and auscultation |
| P. ae. | in equal parts |
| P-a-ra | Pregnancies (e.g., Para 4-1-2 - 4 pregnancies 1 abortion or miscarriage, 2 living children) |
| Para I | A woman having borne one child (unipara) |
| Para II | A woman having borne two children (bipara) |
| Par. aff. | the part affected |
| PAT | Paroxysmal auricular tachycardia |
| Path. | Pathology |
| P.C. (p.c.) | after meals |
| P.D. | Potential difference |
| P.D.C. | Private diagnostic clinic |

| Abbreviation | Meaning |
|---|---|
| P.E. | Physical examination |
| Ped. | Pediatrics |
| P.H. | Past history |
| Phys. Med. | Physical Medicine |
| P.I. | Present Illness |
| P.I.D. | Pelvic inflammatory disease |
| P.L. (p.l.) | Light perception |
| P.M. | after death |
| P.M.B. | Polymorphonuclear basophilic leukocytes |
| P.M.E. | Polymorphonuclear eosinophilic leukocytes |
| P.M.I. | Point of maximal impulse (of heart on chest wall) |
| P.M.N. | Polymorphonuclear neutrophilic leukocytes |
| P.M.P. | Previous menstrual period |
| P.N. | Percussion note |
| P.N.D. | Postnasal drip |
| Polio. | Poliomyelitis, epidemic |
| P. Op. | Postoperative |
| PPD. | Purified protein derivative of tuberculin |
| p.r.n. | whenever necessary |
| Prog. | Prognosis |
| P.S.P. | Phenolsulfonphthalein test (kidney) |
| P. Surg. | Plastic Surgery |
| Psy. | Psychiatry |
| Psych. | Psychology |
| pt. | Patient |
| P.T. | Physical therapy |
| pulv. | Powder |
| P.U.O. | Pyrexia of undetermined origin |
| Px. | Pneumothorax |
| q.d. | every day |

| Abbreviation | Meaning |
|---|---|
| q.h. | every hour |
| q.i.d. | four times a day |
| q.n. | every night |
| q.q.hor. | every hour |
| q.s. | enough; a sufficient quantity |
| q.v. | as much as you like |
| r. | Roentgen (X ray) |
| R. | Respiration |
| Ra | Radium |
| R.B.C. | Red blood cells (red blood count) |
| R.C.D. | Relative cardiac dullness |
| R.C.M. | Right costal margin |
| R.D. | Reaction of degeneration |
| R.E.S. | Reticuloendothelial system |
| R.H.D. | Relative hepatic dullness |
| Rg. neg. | Rhesus factor negative |
| R.I.F. | Right iliac fossa |
| R.L.Q. | Right lower quadrant |
| R.L.S. | Person who stammers, being unable to enunciate R,L, and S |
| R.M. | Respiratory movement |
| R.M.D. | Retromanubrial dullness |
| Rn | Radon |
| R.O.A. | Right occipitoanterior |
| Rom. | Romberg |
| R.O.P. | Right occipitoposterior |
| R.O.S. | Review of systems |
| R.R. & E. | Round, regular and equal (of pupils) |
| R. units | Roentgen units |
| R.U.Q. | Right upper quadrant |
| R.V. | Retroversion |
| R.V.O. | Relaxed vaginal outlet |

| Abbreviation | Meaning |
|---|---|
| s. | without |
| S. | Sacral vertebrae |
| sig. | let it be labeled |
| S.L. | Small lymphocytes |
| S.M.D. | Submanubrial dullness |
| S.M.W.D.Sep. | Single, married, widowed, divorced, separated |
| Sol. | solution |
| solv. | Dissolve |
| S. op.S. (s.o.s.) | if necessary |
| Sp.gr. | Specific gravity |
| sph. | Spherical or spherical lens |
| sq.cell ca. | Squamous cell carcinoma |
| S.R. | Sedimentation rate (C.S.R. - corrected sedimentation rate.) |
| s.s. | Soapsuds |
| Stat. | at once |
| Staph. | Staphylococcus, -al |
| Stb. | Stillborn |
| STD | Skin test dose |
| Stet | Let it stand |
| Strab. | Strabismus |
| Str. | Streptococcus, -al |
| STS | Serology tests for syphilis |
| Subcu. | Subcutaneous |
| Sug. | Sugar |
| Surg. | Surgery, surgical, surgeon |
| T. | Temperature |
| T | Intraocular tension |
| T & A | Tonsils and adenoids; tonsillitis and adenoiditis; tonsillectomy and adenoidectomy |

| Abbreviation | Meaning |
|---|---|
| T.A. | Toxin-antitoxin |
| T.A.B. | Typhoid, paratyphoid A and paratyphoid B vaccine |
| T.A.T. | Tetanus antitoxin |
| T.B. (t.b.) | Tuberculosis; tubercle bacilli |
| Tbc (tbc) | Tuberculosis; tubercle bacilli |
| T.I.D. | three times a day |
| T.J. | Triceps jerk |
| Tn. | Normal intraocular tension |
| T.P. | Total protein |
| T.P.R. | Temperature, pulse, respiration |
| Tr. (tr.) | tincture |
| T.S. | Test solution |
| U.C.H.D. | Usual childhood disease |
| U.D. | Urethral discharge |
| ult. | lastly |
| Ung. | Ointment |
| Ur. (ur.) | Urine |
| U.R.I. | Upper respiratory infection |
| Urol. | Urology |
| Va. | Visual acuity |
| Vand. | Ven den Bergh (Liver function test) |
| V. and T. | Volume and tension of pulse |
| var. | Variety |
| V.D. | Venereal disease |
| V.D.G. | Venereal disease - gonorrhea |

| Abbreviations | Meaning |
|---|---|
| V.D.H. | Valvular disease of heart |
| V.D.S. | Venereal disease - syphilis |
| Ves. ur. | urinary bladder |
| V.f. | Vision field (field of vision) |
| V.F. | Vocal fremitus |
| viz. | namely |
| V.R. | Vocal resonance |
| V.W. | Vessel wall |
| W.B.C. (w.b.c.) | White blood cells (white blood count) |
| w-d | well-developed |
| W.F. | White female |
| W.M. | White male |
| w-n | Well-nourished |
| W.r. | Wassermann reaction |
| Wt. | Weight |
| X. | Unit of X-ray dosage |
| y.s. | A yellow spot on retina |

The following list was taken from "Medical Terminology Made Easy",

Assistant Professor in Medical Record
Library Science and Medical Record Librarian

Duke University School of Medicine and Hospital

Durham, North Carolina

Cancer-directed surgery includes any operative procedure performed for removal of cancer tissue, even if residual tissue is known to be not removed. The extent of surgery within the broad terminology of some of the procedures listed below will be discussed at the end of this chapter and repeated in Anatomy.

| SURGICAL PROCEDURE | EXCISION/REMOVAL of |
|---|---|
| ADRENALECTOMY | adrenal gland |
| ALVEOLECTOMY | alveolar process of upper or lower jaw |
| CHOLECYSTECTOMY | gallbladder and cystic duct |
| CHOLEDOCHECTOMY | common bile duct |
| CORDECTOMY | a cord, as removal of a vocal cord |
| CRANIECTOMY | strips or pieces of the cranial bone |
| CYSTECTOMY | gallbladder; urinary bladder; removal of cyst |
| DUODENECTOMY | duodenum |
| DUODENOPANCREATECTOMY | duodenum and head of pancreas |
| EXENTERATION | contents of body cavity |
| EPIGLOTTIDECTOMY | epiglottis |
| ESOPHAGECTOMY | esophagus |
| ESOPHAGOGASTRECTOMY | parts of stomach and esophagus |
| EXTIRPATION | complete removal of a part or surgical destruction of a part |
| GASTRECTOMY | stomach |
| GINGIVECTOMY | gums |
| GLOSSECTOMY | tongue |
| HYPOPHYSECTOMY | hypophysis cerebri or pituitary body |
| HYSTERECTOMY | uterus |

| SURGICAL PROCEDURE | EXCISION/REMOVAL of |
|---|---|
| JEJUNECTOMY | jejunum |
| LOBECTOMY | lobe of an organ or gland |
| LYMPHADENECTOMY | a lymph node |
| MASTECTOMY | breast |
| NEPHRECTOMY | kidney |
| OOPHORECTOMY | ovary |
| ORCHIDECTOMY<br>ORCHIECTOMY | testes |
| PAROTIDECTOMY | parotid gland |
| PHARYNGECTOMY | pharynx |
| PNEUMONECTOMY | entire lung |
| PROSTATECTOMY | prostate |
| SALPINGECTOMY | uterine tube |
| SPLENECTOMY | spleen |
| THYROIDECTOMY | thyroid gland |
| UVULECTOMY | ureter |
| VASECTOMY | vas or ductus deferens |
| VESULECTOMY | seminal vesicles |
| VULVECTOMY | vulva |

## SURGERY

| OPERATIVE TERM | DEFINITION |
|---|---|
| Polypectomy | Removal of polyp accessible by endoscope |
| Segmental Resection | Removal of less than one-half of stomach |
| Proximal Subtotal Gastrectomy | Resection of the cardia of the stomach |
| Esophagogastrectomy | Segmental resection of the stomach with a portion of the esophagus |
| Subtotal Gastrectomy | The pathology report will most likely state the general measurement or the more specific description in centimeters or percentage of gastric tissue in the specimen. |
| Total Gastrectomy | Removal of the entire stomach including the cardio-esophageal junction (also referred to as the "stump") |

The term RADICAL when used in describing gastric surgery almost always means the removal of a good portion of lymph-node bearing areas or portions of contiguous organs. Another term is EXTENDED which has the same meaning. Therefore, you are likely to find the term "radical" or "extended" used in combination with every procedure from segmental resection to total gastrectomy.

## SURGERY

| | |
|---|---|
| Wedge Resection | removal of an anatomical segment of a lobe or lingula |
| Segmental Resection | removal of a surgical segment within a lobe |
| Lobectomy | removal of one lobe |
| Bilobectomy | removal of two lobes of a lung, usually in continuity |
| Pneumonectomy | removal of an entire lung |

The term lobectomy has usually been used without a qualifying adjective, but the trend is changing. A simple lobectomy is defined as an operation restricted to the excision of a lobe, or even two lobes without removal of lymph nodes. A radical lobectomy is an operation in which one or two lobes of a lung are excised in a bloc dissection with the regional hilar and mediastinal lymph nodes.

The qualifying adjectives are used in the same fashion to describe the pneumonectomy. They do not infer an operation of great magnitude in which adjacent thoracic structures, such as the chest wall or diaphragm are added to the excised organ. When these are included as a "right upper lobectomy with excision of three, four, or five ribs". However, the excision of ribs may be the surgical approach and not actually considered surgical therapy.

SURGERY

| OPERATIVE TERM | TISSUE EXCISED |
|---|---|
| Excisional Biopsy | tumor with clear margins |
| "Lumpectomy"<br>Limited Mastectomy | tumor with wide excision of surrounding breast tissue |
| Quadrant Mastectomy<br>Segmental Resection<br>Partial Mastectomy<br>Hemimastectomy | one quadrant of the breast<br>segment of the breast<br>portion of the breast<br>one half of the breast |
| Simple Mastectomy<br>Total Mastectomy<br>Complete Mastectomy | amputation of the breast - may or may not include the tail of the breast and may or may not include the fascia |
| Modified Radical Mastectomy | amputation of the breast, entire axillary contents en bloc |
| | Variations: amputation of the breast, partial removal of the axillary contents, partial removal of the pectoralis major, partial removal of the pectoralis minor, complete removal of the pectoralis major or a combination of these less than total ablations |
| | amputation of the breast, entire axillary contents and removal of the pectoralis major en toto |
| Radical Mastectomy | amputation of the breast, complete axillary dissection, all of the pectoralis major and the pectoralis minor en bloc |
| Extended Radical Mastectomy<br>Supraradical Mastectomy | radical mastectomy plus removal of the internal mammary nodes and possibly the thoracic nerve |
| | Also: radical neck dissection or at least removal of the supraclavicular area in continuity with the breast and axilla |

## SURGERY

| OPERATIVE TERM | DEFINITION |
|---|---|
| Electrocoagulation | Destruction of tumor tissue by passage of high-frequency currents (electrodes) |
| Fulgeration | Destruction of tumor by means of electric sparks |
| TUR (Transurethral Resection) | Removal of tumor tissue via urethra with use of cystoscope |
| Segmental Resection | Removal of a large portion of the bladder wall and overlying peritoneum |
| Partial Cystectomy | Removal of a large cuff of urinary bladder |
| Radical Retropubic Prostatectomy (in combination with above) | Resection of prostate with one or both ureters reimplanted |
| Complete Cystectomy<br>Total Cystectomy | Resection of the entire bladder, seminal vesicles, prostate in the male; entire bladder and urethra in the female |
| Simple Total Cystectomy | In addition to above, as much connective tissue as possible and the uterus and vagina in the female |
| Radical Cystectomy | As above, with pelvic node dissection |
| Pelvic Exenteration | Complete excision of all pelvic viscera, sigmoid colostomy, bilateral ureteral implantation into the colon above the colostomy |

Radiation is curative for some tumors. It is useful in the management of advanced tumors which are non-resectable and in disseminated disease. Irradiation is often employed in the management of the patient who is operable, but refuses surgery, or in those patients whose general debility or concommitant disease contraindicates surgery.

Response to radiation therapy varies greatly because of the dependency upon the site of the primary tumor, the histologic type and histologic differentiation (grade).

In some cancers - epidermoid carcinoma of the skin, lip, and cervix - the treatment of choice may be irradiation as a curative modality.

Radiation therapy is combined with surgery in several ways for the treatment of the primary tumor, local extension and regional node metastases:

1. primary tumor treated by radiation, lymph node metastases surgically treated
2. primary tumor treated by surgery, lymph node metastases treated with radiation therapy
3. radiation preceding surgery to tumor area
4. radiation following surgery to tumor area
5. pre-and post-operative radiation
6. surgery to improve general condition of tissue or to correct functional impairment prior to radiation therapy

Radiation therapy may be administered to prevent bone fractures and to give relief of pain and disability. Dosage rate and numbers of exposures will determine whether this therapy is supportive only.

Better and newer techniques make possible the more effective treatment of the cancer with less damage to the surrounding tissue and many cancers deep within the body are now in the range of the new multimillion volt x-ray generators and radioactive Cobalt 60.

Intracavitary and interstitial radiation produce a high radiation dose where radiation is desired, but a rapidly diminishing dose rate outside of the tumor region. Using this modality, applicators containing radioactive sources are introduced into body cavities, and have been successful for malignancies of the cervix, uterus and vagina.

Sources of Radiation used in the treatment of cancer are:
- Superficial X-radiation (10-150 kv)

Orthovoltage X-radiation (200-1000 kv)
- Cesium Teletherapy

Megavoltage X-radiation (2-35 mev)
- Cobalt 60
- Linear Accelerator

Electron Therapy
- Betatron
- Linear Accelerator

Interstitial X-ray Therapy (as sealed source)
- Needles, Seeds, Wires

Intracavitary X-ray Therapy (as sealed source)
- Surface, Tubes

Therapeutic Isotopes (given systemically either IV or Orally)
- P 32, I 131, Y 90

Therapeutic Isotopes (given intracavitary as liquid)

Heavy Ion X-ray Therapy

Neutron X-ray Therapy

Pion X-ray Therapy

Chemotherapy is the use of chemicals and drugs which destroy malignant cells and tissue without harm to normal surrounding tissues. Anticancer drugs spread throughout the body system and destroy cancer cells which the physician cannot locate.

In solid tumors which are widespread, the therapy is used in conjunction with surgery and/or radiation as well as alone. Under study at this time is the feasibility of the use of chemotherapy with other modalities early in the disease.

Combination chemotherapy in the treatment of recurrent or advanced disease in breast cancer has been encouraging. This therapeutic approach has been particularly successful in producing long-term remissions in acute lymphatic leukemia in children and in Hodgkin's disease.

Some of the more common combination regimens are:

COAP - cytoxan, vincristine, cytosine arabanoside, prednisone

COMP - vincristine, cytoxan, 6-mercapto-purine, prednisone

COP - cyclophosphamide, vincristine, prednisone

MOPP - nitrogen mustard, vincristine, prednisone, procarbazine

POMP - vincristine, methotrexate, 6-mercapto-purine, prednisone

VAMP - vincristine, amethopterin, 6-mercapto-purine, prednisone

The following list of chemotherapeutic agents was compiled by Susan S. Devesa for the Third National Cancer Survey and has been brought up to date as of July, 1975. The list is in alphabetical order with use of the terms most likely to be used in the hospital chart. The agents are grouped as Alkalating Agents and Antimetabolites. Hormones, antibiotics, and plant natural products complete this list.

ALKALATING AGENTS

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| ADRIAMYCIN | Doxorubicin Hydrochloride |
| ALKERAN | L-PHENYLALANINE MUSTARD |
| BCNU | BIS-CHLORO-NITRO-UREA |
| BIANOXANE | |
| BLEOMYCIN | |
| CARMUSTINE | BIS-CHLORO-NITRO-UREA |
| CB-1348 | CHLORAMBUCIL |
| CB-3025 | L-PHENYLALANINE MUSTARD |
| CTX | CYCLOPHOSPHAMIDE |
| CYTOXAN | CYCLOPHOSPHAMIDE |
| DBD | DIBROMODULCITOL |
| DBM | DIBROMOMANNITOL |
| DEGRANOL | MANNITOL NITROGEN MUSTARD |
| DIHYDROXYBUSULFAN | |
| DL-O-SARCOLYSIN | DL-ORTHOMERPHALAN |
| DTIC | Decarbizine |
| ELDERFIELD PYRIMIDINE MUSTARD | |
| ENDOXAN | CYCLOPHOSPHAMIDE |
| GT-41 | BUSULFAN |
| HN2 | NITROGEN MUSTARD |
| LEUKERAN | CHLORAMBUCIL |
| L-PAM | L-PHENYLALANINE MUSTARD |
| L-SARCOLYSIN | L-PHENYLALANINE MUSTARD |

Chemotherapy listing continued:

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| MANNOMUSTINE HYDROCHLORIDE | MANNITOL NITROGEN MUSTARD |
| MECHLORETHAMINE | NITROGEN MUSTARD |
| MECHLORETHAMINE HYCROCHLORIDE | NITROGEN MUSTARD |
| MELPHALAN | L-PHENYLALANINE MSUTARD |
| MERPHALAN | ORTHOMERPHALAN |
| METHYLBIS AMINE HCL | NITROGEN MUSTARD |
| MUSTARGEN | NITROGEN MUSTARD |
| MUSTARGEN HYDROCHLORIDE | NITROGEN MUSTARD |
| MYELOBROMOL | DIBROMOMANNITOL |
| MYELOLEUKON | BUSULFAN |
| MYLERAN | BUSULFAN |
| PAM | L-PHENYLALANINE MUSTARD |
| PHENYLALANINE MUSTARD | L-PHENYLALANINE MUSTARD |
| PHOSPHORAMIDE MUSTARD | CYCLOPHOSPHAMIDE |
| PROCYTOX | ORTHOMERPHALAN |
| SARCOLYSIN | TRIETHYLENETHIOPHOSPHORAMIDE |
| STEPA | TRIETHYLENE MELAMINE |
| TEM | TRIETHYLENE PHOSPHORAMIDE |
| TEPA | TRIETHYLENETHIOPHOSPHORAMIDE |
| TESPA | TRIETHYLENETHIOPHOSPHORAMIDE |
| THIOPHOSPHORAMIDE | TRIETHYLENETHIOPHOSPHORAMIDE |
| THIO-TEPA | TRIETHYLENETHIOPHOSPHORAMIDE |
| TRYPTOPHAN MUSTARD | URACIL MUSTARD |
| TSPA | URACIL MUSTARD |
| U-8344 | PIPOBROMAN |
| URACIL NITROGEN MUSTARD | |
| UROCYTE | |

## ANTIMETABOLITES

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| 1-AMINOCYCLOPENTANE-1-CARBOXYLIC AC | |
| 2-AMINO-6-MERCAPTOPURINE | 6-THIOGUANINE |
| ARABINOSYLCYTOSINE | CYTOSINE ARABINOSIDE |
| ARA-C | CYTOSINE ARABINOSIDE |
| AZAGUANINE | 8-AZAGUANINE |
| AZAN | 8-AZAGUANINE |
| AZASERINE | SERINE, DIAZOACETATE L- |
| AZATHIOPRINE | IMURAN |
| 6-AZAURACIL RIBOSODE | 6-AZAURIDINE |
| AZAURIDINE | 6-AZAURIDINE |
| 6-AZ | 6-AZAURACIL |
| AZOTOMYCIN | DUAZOMYCIN B |
| AZS | SERINE, DIAZOACETATE L- |
| AZU | 6-AZAURACIL |
| AZUR | 6-AZAURIDINE |
| BROMODEOXYURIDINE | 5-BROMODEOXYURIDINE |
| BUDR | 5-BROMODEOXYURIDINE |
| 5-BUDR | 5-BROMODEOXYURIDINE |
| CA | CYTOSINE ARABINOSIDE |
| 6-CP | 6-CHLOROPURINE |
| CYTARABINE | CYTOSINE ARABINOSIDE |
| CYTOSAR | CYTOSINE ARABINOSIDE |
| CYTOSINE ARABINOSIDE HYDROCHLORIDE | |
| 5-DIAZOURACIL | |
| DICHLOROMETHOTREXATE | |
| DON | DUAZOMYCIN |
| DUAZOMYCIN A | |
| DUAZOMYCOM C | |
| 9-ETHYL-6-MERCAPTOPURINE | |

Chemotherapy listing continued:

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| FLOXURIDINE | 5-FLUOROURIDINE |
| 2-FLUOROADENOSINE | |
| FLUOROURACIL | 5-FLUOROURACIL |
| FLURACIL | 5-FLUOROURACIL |
| FLURIL | 5-FLUOROURACIL |
| 5-FU | 5-FLUOROURACIL |
| F3TDR | TRIFLUOROMETHYLDEOXYURIDINE |
| FUDR | 5-FLUOROURIDINE |
| 5-FUDR | 5-FLUORODEOXYURIDINE |
| FUR | 5-FLUOROURIDINE |
| GUANAZOLO | 8-AZAGUANINE |
| IODODEOXYURIDINE | 5-IODODEOXYURIDINE |
| IUDR | 5-IODODEOXYURIDINE |
| 5-IUDR | 5-IODODEOXYURIDINE |
| MERCAPTOPURINE | 6-MERCAPTOPURINE |
| 6-MERCAPTOPURINE | |
| METHOTREXATE | AMETHOPTERIN |
| METHYLMERCAPTOPURINE RIBOSIDE | 6-METHYLMERCAPTOPURINE RIBOSIDE |
| 1-METHYLTHIOGUANINE | |
| MMPR | 6-METHYLMERCAPTOPURINE RIBOSIDE |
| 6-MMPR | 6-METHYLMERCAPTOPURINE RIBOSIDE |
| 6-MP | 6-MERCAPTOPURINE |
| 6-MP-RIBOSIDE THIOSINE | |
| MTX | AMETHOPTERIN |
| NORLEUCINE,6-DIAZO-5-OXO- | DUAZOMYCIN |
| PURINETHOL | 6-MERCAPTOPURINE |
| PURIN-6-YLTRIMETHYLAMMONIUM CL. | TRIMETHYLPURIN-6-YLAMMONIUM CL. |
| 6-TG | 6-THIOGUANINE |

Chemotherapy listing continued:

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| THIOGUANINE | 6-THIOGUANINE |
| THIOGUANOSINE | |
| TRAMP | TRIMETHYLPURIN-6-YLAMMONIUM CL. |
| TRIFLUOROMETHYL URIDINE | |

Hormonal therapy is used to treat widespread cancers of the breast and prostate - female sex hormones to neutraloze the male sex hormones in prostatic cancer, and male sex hormones in the treatment of premenopausal women with breast cancer. For postmenopausal women, the female sex hormones are used. The intent of therapy is supportive, not curative.

| Trade Names of Synonyms | Chemical or Generic Name |
|---|---|
| AMNESTROGEN | CONJUGATED ESTROGENS |
| AQUADIOL | ESTRADIOL |
| CARBESTROL | |
| CONESTRON | CONJUGATED ESTROGENS |
| CYTONAL | HONVAN |
| DELESTROGEN | ESTRADIOL VALERATE |
| DEPO-ESTRADIOL CYCLOPENTYLPROPIONAT | ESTRADIOL CYPIONATE |
| DICORVIN | DIETHYLSTILBESTROL |
| EQUILIN | CONJUGATED ESTROGENS |
| ESTINYL | ETHINYL ESTRADIOL |
| ESTRADIOL, ETHINYL | ETHINYL ESTRADIOL |
| ESTRADURIN | POLYESTRADIOL PHOSPHATE |
| ESTRATAB | |
| ESTRIOL | |
| ESTRONE | PIPERAZINE ESTRONE SULFATE |
| ETICYLOL | ETHINYL ESTRADIOL |
| FEMOGEN | CONJUGATED ESTROGENS |
| HEXESTROL | |
| HORMONIN | ESTRADIOL |
| ISOHEXESTROL | |
| KNONVAN | HONVAN |
| MENEST | CONJUGATED ESTROGENS |
| MESTRANOL | |
| NEO-AMNIOTIN | PIPERAZINE ESTRONE SULFATE |
| OGEN | PIPERAZINE ESTRONE SULFATE |
| OVOCYLIN | ESTRADIOL |
| OVOCYLIN DIPROPIONATE | ESTRADIOL DIPROPIONATE |
| 6-OXAESTRONE | |
| PHENESTERIN | |
| POLYESTRADIOL | POLYESTRADIOL PHOSPHATE |

Hormones - Estrogens listing continued:

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| PREMARIN | CONJUGATED ESTROGENS |
| PROGYNON | ESTRADIOL |
| RESTROL | DIENESTROL |
| STILBESTROL | DIETHYLSTILBESTROL |
| STILBETIN | DIETHYLSTILBESTROL |
| STILPHOSTROL | HONVAN |
| SULESTREX | PIPERAZINE ESTRONE SULFATE |
| SYNESTROL | DIENESTROL |
| TACE | CHLOROTRIANISENE |
| TAG-39 | CONJUGATED ESTROGENS |
| THEELIN | PIPERAZINE ESTRONE SULFATE |
| VALLESTRIL | METHALLENESTRIL |

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| ADROYD | OXYMETHOLONE |
| ANADROL | OXYMETHOLONE |
| ANAVAR | OXANDROLONE |
| ANDROSTERONE | |
| DECA-DURABOLIN | NANDROLONE DECANOATE |
| 1-DEGYDROTESTOLOLACTONE | DELTA-1-TESTOLOLACTONE |
| 6-DEGYDROTESTOLOLACTONE | |
| DELAPROMAR | METHENOLONE ENANTHATE |
| DELATESTRYL | TESTOSTERONE |
| DEPO-TESTOSTERONE | TESTOSTERONE |
| DEPO-TESTOSTERONE CYPIONATE | |
| DIANABOL | METHANDROSTENOLONE |
| 7B-17A-DIMETHYLTESTOSTERONE | |
| DIMETHYL TESTOSTERONE | |
| DROLBAN | DROMOSTANOLONE PROPIONATE |
| DROMOSTANOLONE | DROMOSTANOLONE PROPIONATE |
| DURABOLIN | NORANDROLONE PHENPROPIONATE |
| 6A-FLUOROTESTOSTERONE PROPIONATE | |
| 6B-FLUOROTESTOSTERONE PROPIONATE | |
| FLUOSTERONE | FLUOXYMESTERONE |
| HALODRIN | FLUOXYMESTERONE |
| HALOTESTIN | FLUOXYMESTERONE |
| MALESTRONE | TESTOSTERONE |
| MAXIBOLIN | ETHYLESTRENOL |
| METANDREN | METHYLTESTOSTERONE |
| METHYLANDROSTENEDIOL | METHANDRIOL |
| 2A-METHYL-DIHYDROTESTOSTERONE | |
| 4A-METHYL-DIHYDROTESTOSTERONE | |
| 4-METHYLTESTOSTERONE | |
| 17-METHYLTESTOSTERONE | METHYLTESTOSTERONE |

Hormones - Androgens listing continued:

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| METHYLTRIENOLONE | |
| NANDROLONE PHENPROPIONATE | NANDROLONE PHENPROPIONATE |
| NEO-HOMBREOL M | METHYLTESTOSTERONE |
| NILEVAR | NORTHANDROLONE |
| NORTESTOSTERONE PHENPROPIONATE | NORANDROLONE PHENPROPIONATE |
| ORA-TESTRYL | FLUOXYMESTERONE |
| ORETON | TESTOSTERONE |
| ORETON METHYL | METHYLTESTOSTERONE |
| ORETON PROPIONATE | |
| PERANDREN | TESTOSTERONE |
| PRIMOBOLAN | METHENOLONE ENANTHATE |
| STENEDIOL | METHANDRIOL |
| TESLAC | DELTA-1-TESTOLOLACTONE |
| TEST-ESTRIN TIMED ACTION | METHYLTESTOSTERONE |
| TESTOLOLACTONE | |
| TESTOLOLACTONE 7 ALPHA HYDROXY | |
| TESTOLOLACTONE 7 DEHYDRO-9-FLUORO-. | |
| TESTOSTERONE ENANTHATE | |
| TESTOSTERONE CYCLOPENTYLPROPIONATE | |
| TESTOSTERONE PROPIONATE | TP |
| TESTRONE | TESTOSTERONE |
| TESTRYL | TESTOSTERONE |
| TETA | METHYLTESTOSTERONE |
| ULTANDREN | FLUOXYMESTERONE |
| WINSTROL | STANOZOLOL |

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| ACTH | ADRENOCORTICOTROP (H) IN |
| ACTHAR | ADRENOCORTICOTROP (H) IN |
| ACTON | ADRENOCORTICOTROP (H) IN |
| ALPHADROL | FLUPREDNISOLONE |
| ANHYDROHYDROXYPROGESTERONE | HYDROXYPROGESTERONE |
| ARISTOCORT | TRIAMCINOLONE |
| CELESTONE | BETAMETHASONE |
| CHLORMADINONE | |
| CHLORMADINONE ACETATE | |
| COMPOUND E | CORTISONE ACETATE |
| COMPOUND F | HYDROCORTISONE |
| CORTATE ACETATE | DESOXYCORTICOSTERONE ACETATE |
| CORTEF | HYDROCORTISONE |
| CORTICOTROP (H) IN | ADRENOCORTICOTROP (H) IN |
| CORTIFAN | HYDROCORTISONE |
| CORTISOL | HYDROCORTISONE |
| CORTOGEN | CORTISONE |
| CORTOGEN ACETATE | CORTISONE ACETATE |
| CORTONE | CORTISONE |
| CORTONE ACETATE | CORTISONE ACETATE |
| CORTRIL | HYDROCORTISONE |
| CORTROPHIN | ADRENOCORTICOTROP (H) IN |
| CYPROTERONE ACETATE | |
| CYTOMEL | SODIUM-L-TRIIODOTHYRONINE |
| DECADRON | DEXAMETHASONE |
| DELALUTIN | HYDROXYPROGESTERONE CAPROATE |
| DELAT-DOME | PREDNISONE |
| DELTA-CORTEF | PREDNISOLONE |
| DELTACORTISONE | PREDNISONE |
| DELTAHYDROCORTISONE | PREDNISOLONE |

Hormones - Others listing continued:

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| DELTASONE | PREDNISONE |
| DELTRA | PREDNISONE |
| DEPO-ACTH | ADRENOCORTICOTROP (H) IN |
| DEPO-MEDROL | METHYLPREDNISOLONE |
| DEPO-PROVERA | MEDROXYPROGESTERONE |
| DERONIL | DEXAMETHASONE |
| DEXAMETH | DEXAMETHASONE |
| DIMETHISTERONE | |
| 2A-17DIMETHYL-19NORTESTOSTERONE | |
| DOCA ACETATE | DESOXYCORTICOSTERONE ACETATE |
| DUPHASTON | DYDROGESTERONE |
| 17A-ETHINYL-19-NORTESTOSTERONE | |
| ETHISTERONE | HYDROXYPROGESTERONE |
| ETHYNODIOL DIACETATE | |
| FLORINEF ACETATE | FLUDROCORTISONE ACETATE |
| FLUDROHYDROCORTISONE ACETATE | FLUDROCORTISONE ACETATE |
| GAMMACORTEN | DEXAMETHASONE |
| HALDRONE | PARAMETHASONE ACETATE |
| HEXADROL | DEXAMETHASONE |
| HYCORTOLE | HYDROCORTISONE |
| HYDELTRA | PREDNISOLONE |
| HYDELTRASOL | PREDNISOLONE |
| HYDROCORTONE | HYDROCORTISONE |
| HYDROCORTISONE ACETATE | |
| ISOPREGNENONE | DYDROGESTERONE |
| KENACORT | TRIAMCINOLONE |
| LEDERCORT | TRIAMCINOLONE |
| LIOTHYRONINE | SODIUM-L-TRIIODOTHYRONINE |

Hormones - Others listing continued:

| Trade Name or Synonyms | Chemical or Generic Name |
|---|---|
| LIPO-LUTIN | PROGESTERONE |
| LUTOCYLOL | HYDROXYPROGESTERONE |
| LUTROMONE | PROGESTERONE |
| LYNESTRENOL | NORETHINDRONE ACETATE |
| MEDONE | |
| MEDROL | METHYLPREDNISOLONE |
| MEDROXYPROGESTERONE | MEDROXYPROGESTERONE ACETATE |
| MELENGESTROL ACETATE | |
| 6-METHYLHYDROXYPROGESTERONE | METHYLHYDROXYPROGESTERONE |
| 2A-METHYL-11-OXOPROGESTERONE | |
| METHYLPROGESTERONE | |
| METICORTELONE | PREDNISOLONE |
| METICORTEN | PREDNISONE |
| NORETHINDRONE | NORETHINDRONE ACETATE |
| NORTHISTERONE | NORETHINDRONE ACETATE |
| NORETHYNODREL | |
| NORLUTATE | NORETHINDRONE ACETATE |
| NORLUTIN | NORETHINDRONE ACETATE |
| 19-NORTESTOSTERONE | |
| OXYLONE | FLUOROMETHOLONE |
| PARACORT | PREDNISONE |
| PARACORTOL | PREDNISOLONE |
| PARAMETHASONE | PARAMETHASONE ACETATE |
| PERCORTEN ACETATE | DESOXYCORTICOSTERONE ACETATE |
| PRANONE | HYDROXYPROGESTERONE |
| PREDNE-DOME | PREDNISOLONE |
| PREDNISOLONE SODIUM SUCCINATE | |
| PREGNENINOLONE | HYDROXYPROGESTERONE |

Hormones - Others listing continued:

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| PROGESTIN | PROGESTERONE |
| PROGESTONE | PROGESTERONE |
| PROGESTORAL | HYDROXYPROGESTERONE |
| PROLOID | THYROGLOBULIN |
| PROLUTON | PROGESTERONE |
| PROVERA | MEDROXYPROGESTERONE |
| REICHSTEIN'S B | CORTICOSTERONE |
| SOLU-CORTEF | HYDROCORTISONE |
| SOLU-MEDROL | METHYLPREDNISOLONE |
| STERANE | PREDNISOLONE |
| STEROLONE | |
| SYNTHROID | LEVOTHYROXINE |
| THYROID EXTRACT | |
| THYROP (H) IN | |
| THYROXIN (E) | |
| THYTROPAR | THYROTROP (H) IN |
| TRIT | TRIIODOTHYRONINE |
| TSH | THYROTROP (H) IN |

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| LCR | VINCRISTINE SULFATE |
| LEUROCRISTINE | VINCRISTINE SULFATE |
| ONCOVIN | VINCRISTINE SULFATE |
| VCR | VINCRISTINE SULFATE |
| VELBAN | VINCALEUKOBLASTINE SULFATE |
| VINBLASTINE | VINCALEUKOBLASTINE SULFATE |
| VINBLASTINE SULFATE | VINCALEUKOBLASTINE SULFATE |
| VLB | VINCALEUKOBLASTINE SULFATE |

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| A-2371 | MITHRAMYCIN |
| ADRIAMYCIN | |
| BLEOMYCIN | |
| COSMEGEN | ACTINOMYCIN D |
| DACTINOMYCIN | ACTINOMYCIN D |
| DAUNORUBICIN | DAUNOMYCIN |
| DNR | DAUNOMYCIN |
| MERACTINOMYCIN | ACTINOMYCIN D |
| MITHRACIN | MITHRAMYCIN |
| MITOGILLIN | |
| MITOMYCIN C | |
| PA-144 | MITHRAMYCIN |
| PORFIROMYCIN | METHYL MITOMYCIN C |
| RUBIDOMYCIN | DAUNOMYCIN |
| STREPTONIGRIN | |
| STREPTONIGRIN METHYL ESTER | |
| STREPTOZOTOCIN | |
| TUBERCIDIN | |

By "immunotherapy" is meant the stimulation of the body's natural mechanisms for biochemically attacking foreign cells and substances. Investigators have not yet discovered the optimal procedures or techniques to help the body's immune defense system reject the cancerous cells.

Certain active agents have effected tumor regressions in laboratory animals. Now clinical studies are being conducted against several forms of human cancer, usually combining immunotherapy with one or more modes of treatment.

"Palliative" means relieving the symptoms of a disease without really curing it. It is for this reason that the term is sometimes used to describe cancer-directed therapy when it is concluded that all the tumor tissue cannot be removed or destroyed by the procedure.

Below are the more generally prescribed procedures for the relief of pain, for reduction of severity of symptoms, for the control of pressure, and to improve the general well-being of the patient. None of the procedures affect cancer cells.

| | |
|---|---|
| Antibiotics | Caution: Some antibiotics are considered cancer-directed therapy for certain sites. |
| Arteriotomy | Removing blood by an incision into an artery |
| Block | Blocking of sensory nerves or roots with injections of alcohol or other chemical agent |
| Cranial decompression | Removal of a piece of cranium to relieve intracranial pressure |
| Hormones | Caution: Some hormones are considered cancer-directed therapy for certain sites. |
| Lobotomy | Division of one or more nerve tracts in a lobe of the cerebrum |
| Paracentesis | Withdrawal of fluid from the abdominal cavity |
| Phlebotomy (venesection) | Removing blood by an incision into a vein |
| Rhizotomy | Surgical division of any root, as a nerve |
| Thoracentesis | Withdrawal of fluid from the thoracic cavity |
| Tractotomy | Surgical resection of a nerve fiber of the central nervous system |

A surgical procedure that shunts or diverts a passage around the tumor or obstruction associated with the tumor is usually called "Bypass Surgery". Since no tumor tissue is removed, this operative procedure is supportive (or palliative) treatment only and is never considered cancer-directed therapy.

A colostomy is the surgical establishment of an opening of a part of the colon to provide an artificial outlet in the anterior abdominal wall. This formation may be permanent or temporary, i.e., temporary when the procedure is the first stage of a two-stage surgical resection operation. The opening into the colon may be anywhere and the position of the opening will determine the descriptive surgical term, as shown in the following examples:

| SURGICAL PROCEDURE | OPENING SITE |
|---|---|
| Cecostomy | Cecum |
| Ileostomy | Ileum |
| Jejunostomy | Jejunum |
| Sigmoidostomy | Sigmoid |
| Transverse Colostomy | Transverse Colon |

Another form of "Bypass Surgery" is the establishment of an opening directly into a hollow organ from outside the body. This short-circuits the obstruction and permits the placement of a tube for drainage or for feeding. This, too, may be permanent or temporary.

| SURGICAL PROCEDURE | OPENING SITE |
|---|---|
| Nephrostomy | Renal Pelvis (drainage) |
| Gastrostomy | Stomach (feeding) |

An <u>anastomosis</u> is the surgical formation of a passage between any two normally distinct spaces or organs. The following is a list of the operations most frequently performed in the supportive (palliative) treatment of cancer or any other obstructive disease.

| SURGICAL PROCEDURE | ANASTOMOSIS BETWEEN: |
|---|---|
| CECOCOLOSTOMY | the cecum and some part of colon |
| CECOILEOSTOMY | the cecum and ileum |
| CECOSIGMOIDOSTOMY | the cecum and sigmoid colon |
| CHOLECYSTOENTEROSTOMY | gallbladder and some portion of small intestine |
| CHOLECYSTOCOLOSTOMY | gallbladder and some portion of upper colon |

| | |
|---|---|
| CHOLECYSTODUODENOSTOMY | gallbladder and duodenum |
| CHOLECYSTOGASTROSTOMY | gallbladder and stomach |
| CHOLECYSTOILEOSTOMY | gallbladder and ileum |
| CHOLECYSTOJEJUNOSTOMY | gallbladder and jejunum |
| CHOLEDOCHODUODENOSTOMY | common bile duct and duodenum |
| CHOLEDOCHOENTEROSTOMY | common bile duct and small intestine |
| CHOLEDOCHOGASTROSTOMY | common bile duct and stomach |
| COLORECTOSTOMY | colon and rectum (new passage) |
| COLOSIGMOIDOSTOMY | sigmoid and other part of colon |
| DUODENOCHOLECYSTOSTOMY<br>DUODENOCYSTOSTOMY | duodenum and gallbladder |
| DUODENOENTEROSTOMY | duodenum and another part of the intestinal tract |
| DUODENOILEOSTOMY | duodenum and ileum |
| DUODENOJEJUNOSTOMY | duodenum and jejunum |
| EPIDYMOVASOSTOMY | ductus deferens and epididymis |
| ESOPHAGODUODENOSTOMY | esophagus to duodenum (after total gastrectomy) |
| ESOPHAGOJEJUNOSTOMY | esophagus to jejunum (after total gastrectomy) |
| ESOPHAGOESOPHAGOSTOMY | reunion of esophagus (after esophagectomy) |
| GASTRODUODENOSTOMY | stomach and duodenum |
| GASTROGASTROSTOMY | one portion of stomach with another portion of the stomach |
| HEPATICODUODENOSTOMY | hepatic duct and intestine |
| HEPATICOGASTROSTOMY | hepatic duct and stomach |
| HEPATOCHOLANGIODUODENOSTOMY | hepatic duct and duodenum |

| | |
|---|---|
| HEPATICOENTEROSTOMY | hepatic duct and small intestine |
| HEPATOCHOLANGIOJEJUNOSTOMY | hepatic duct and jejunum |
| ILEOCOLOSTOMY | ileum and colon |
| ILEOILEOSTOMY | two different parts of ileum |
| ILEOSIGMOIDOSTOMY | ileum and sigmoid colon |
| JEJUNOCECOSTOMY | jejunum and cecum |
| JEJUNOILEOSTOMY | jejunum and ileum |
| JEJUNOCOLOSTOMY | jejunum and colon |
| URETEROCOLOSTOMY | ureter and urinary bladder |

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| AB-132 | METUREDEPA |
| 1-ACETYL-2-PICOLINOYLHYDRAZINE | 1-ACETYL-2-PICOLINOYLHYDRAZINE |
| BCG | BACILLUS OF CALMETTE AND GRERIN |
| CARBEXONIDE TRICZERO | IMIDAZOLE CARBOZAMINE |
| CARZOLAMIDE | CARZOLAMIDE |
| CLINICAL TRIAL, DRUG UNK. | RANDOM CLINICAL TRIAL, DRUG UNK. |
| COAP | COAP |
| COLCEMIDE | DESMETHYLCOLCHICINE |
| COLCHICINE, DEACETYL-N-METHYL | DESMETHYLCOLCHICINE |
| COMP | COMP |
| COP | COP |
| DDC | DIETHYLDITHIOCARBAMATE |
| DIC | IMIDAZOLE CARBOXAMINE |
| DTIC | IMIDAZOLE CARBOXAMINE |
| DEACETYL-N-METHYL-COLCHICINE | DESMETHYLCOLCHICINE |
| DEOXYPYRIDOXINE | DEOXYPYRIDOXINE |
| DIMETHYL IMIDAZOLE | IMIDAZOLE CARBOXAMINE |
| DIMETHYLAMINOQUINOLONE | DIMETHYLAMINOQUINOLONE |
| DUALAR AB-103 | BENZODEPA |
| E-73 | N-METHYL DIHYDRO |
| ETHIDIUM CHLORIDE | ETHIDIUM CHLORIDE |
| ETHYL CARBAMATE | URETHAN |
| HADACIDIN (SODIUM SALT) | HADACIDIN (SODIUM SALT) |
| HEXAMETHYLMELAMINE | HEXAMETHYLMELAMINE |
| HYDREA | HYDROXYUREA |
| IBENZETHYZIN | METHYL HYDRAZINE DERIVATIVE |
| KRASNITIN | L-ASPARAGINASE |

| Trade Names or Synonyms | Chemical or Generic Name |
|---|---|
| L-ASPARAGINASE | L-ASPARAGINASE |
| LAPACHOL | LAPACHOL |
| LYSODREN | ORTHO PARA'-DDD |
| MIH | METHYL HYDRAZINE DERIVATIVE |
| MATULAN (E) | METHYL HYDRAZINE DERIVATIVE |
| MITOTANE | ORTHO PARA'-DDD |
| METHYL-GAG | ORTHO PAR'-DDD |
| MOPP | MOPP |
| N-DIAZOACETYLGLYCYLHYDRAZIDEGLCINE | N-DIAZOACETYLGLYCYLHYDRAZIDEGLYCINE |
| N-METHYLHDRAZINE | METHYL HYDRAZINE |
| NAFOXIDINE (HYDROCHLORIDE) | NAFOXIDINE (HYDROCHLORIDE) |
| NATULAN | METHYL HYDRAZINE DERIVATIVE |
| O,P'-DDD | ORTHO PARA'-DDD |
| OMAIN | DESMETHYLOLCHICINE |
| PA-124 | GLUTINOSIN |
| PACTAMYCIN | PACTAMYCIN |
| PHENAZINIUM | PHENAZINIUM |
| POLYANION | POLY 5-IODOCYTIDILIC |
| POLY I.C. | POLY 5-IODOCYTIDILIC |
| POMP | POMP |
| PROCARBAZINE | METHYL HYDRAZINE DERVATIVE |
| PSEUDOUREA | PSEUDOUREA |
| PYRAN POLMER | PYRAN POLYMER |
| PYRROLIDINE | PYRROLIDINE |
| RESTICTOCIN | RESTICTOCIN |

| Trade Names or Synonyms | Chemical or Generic Names |
|---|---|
| SPI | PODOPHYLLINIC ACID ETHYLHYDRAZIDE |
| SPG | PODOPHYLLIN |
| SANGIVAMYCIN | SANGIVAMYCIN |
| SAPONARIA OFFICINALIS | SAPONARIA OFFICINALIS |
| SUBSTANCE F | DESMETHYLCOLCHICINE |
| TMCA | TRIMETHYLCOLCHICINIC ACID |
| TEREPHTHALAMLIDE...IMIDAZOLIN | TEREPHTHALAMILIDE...IMIDAZOLIN |
| THENILIDENE GLUCOSIDE | PODOPHYLLIN |
| THIOCARZOLAMIDE | THIOCARZOLAMIDE |
| TOYOCAMYCIN | TOYOCAMYCIN |
| TURLOC | METUREDEPA |
| TYLOCREBRINE | TYLOCREBRINE |
| VAMP | VAMP |



END